COMMODORE user

Incorporating Vic Computing Volume 1 Issue 10 July 1984 UK Price 85p

Tranmer tells all

Two printers: Juki vs MPS-801

Butterfield on garbage



Reviews: Calc Result, Video Pak/ Word, Vizaspell

DON'T JUST SIT THERE - PLAY SOMETHING!

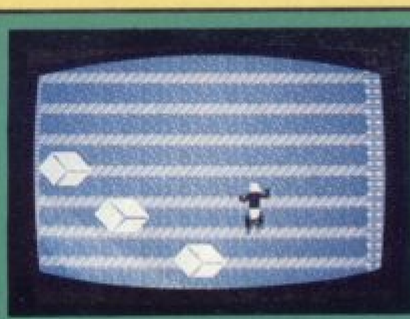
FORBIDDEN FOREST

Forbidden Forest is more of a quest than just a game! The action takes place in a four dimensional scrolling forest landscape which many have entered, but none has returned. Yes, I did say FOUR dimensional - day fades into night as the action unfolds! The quest is to seek out and destroy the Demogorgon, mystic ruler of the Forbidden Forest. Before you can even set eyes on him you will have to contend with his army of fearsome creatures, including mutant spiders, showers of giant frogs, snakes, dragons, skeleton soldiers and more! You have only your trusty bow and arrows to depend on!



SS018







AZTEC CHALLENGE

A challenge on an epic scale! Aztec Challenge takes you on a journey to Mexico and the ancient pyramid of Tenochtitlan. The ancient Aztec gods and their devotees have ensured that no ordinary human can learn the secrets of the temple and live to tell the tale. The pyramid is protected by all manner of treacherous traps and hidden perils - an epic test of your courage and cunning. Aztec Challenge features no less than seven totally different screens - here are just three of them - each of which presents a brand new challenge. We hope your joystick can stand up to it!

SS019

SLINKY

Slinky, the spring, was having fun hopping about when suddenly he came upon a pile of coloured blocks, so he thought he'd play around on them for a while. Much to his amazement he found that they changed colour when he landed on them. Wow! But unknown to him, the blocks belonged to the Wicked Wizard, who sent his friends along to tease our poor hero. Slinky is a real fun package with ninety-nine levels, amazing reward displays, and action replays. Where else could you meet such charming characters as Dusty the dust cloud, Marge the magnet, Ralph the random raindrop, and Lorenzo the chameleon hopper?



SS020

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MULTIPLAN 64 (d95.00) - Outstanding features. VG
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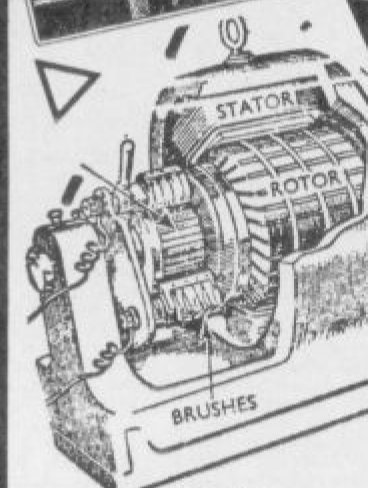
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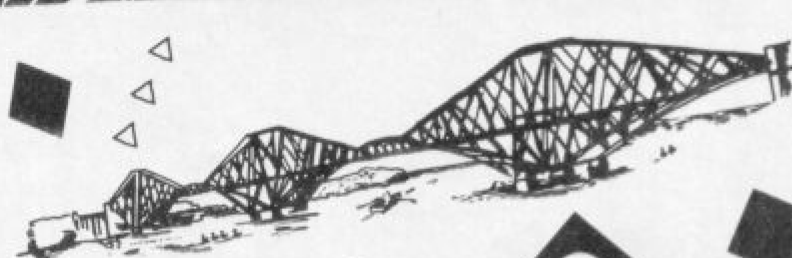








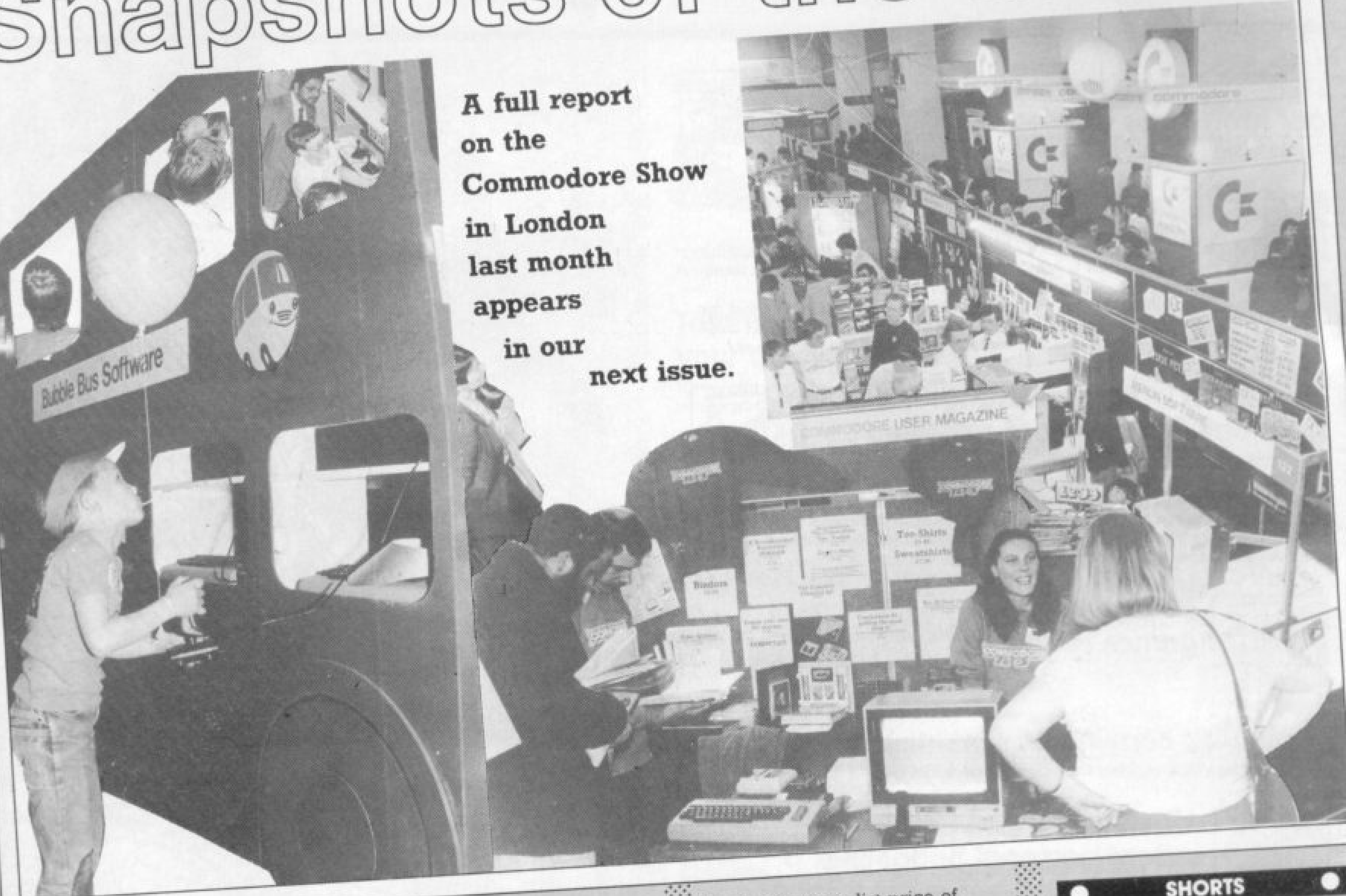
PIECES OF TAPE
PIECES OF TAPE





RABBIT

Snapshots of the Show



A full report on the Commodore Show in London last month appears in our next issue.

The ads man cometh

Computer and computer software advertising regularly falls foul of the Advertising Standards Authority, that august body set up to ensure that we Average Users don't get conned or misled by the industry's propensity for wild claims and dubious offers.

Trouble is, such advertising (according to a recent ASAS report) is on the increase. Last year 400 complaints were made – that's five per cent of all complaints the ASA received.

Although only 55 were upheld, the situation has inspired the ASA to describe some of the ads as "at best, of an ambiguous and often recklessly misleading nature, at worst, of downright deception". That applies not only to some of the larger companies (who have no excuses) but to the bright young boffins who've written some marketable software.

The problem is partly caused by the fast and furious growth in the industry; many advertisers, whether large or small, find that their publicity generates a demand that they cannot meet quickly enough. Under the ASA's code of practise for mail-order, advertisers should not take longer than 28 days to fulfill an order. After that, the customer is entitled to an immediate refund.

Even computer giants like Sinclair are continually caught out in this way. The latest and much-publicised complaints about the company involves the Sinclair QL which was quoted a 28-day delivery way back in January. Acquiring a machine still involves the labour of a Yukon gold prospector.

Pricing of computers is also an area much abused. Computer manufacturers (Commodore is no exception) actively discourages price-cutting so many retailers resort to dubious claims to cajole you into the shop. For example, Dixons, the High Street electrical chain, was reported for claiming a saving of £150 on the Commodore 64. The machine still cost the standard £199.99, though. The reason? Dixons had based its discount on a list price of £349.99.

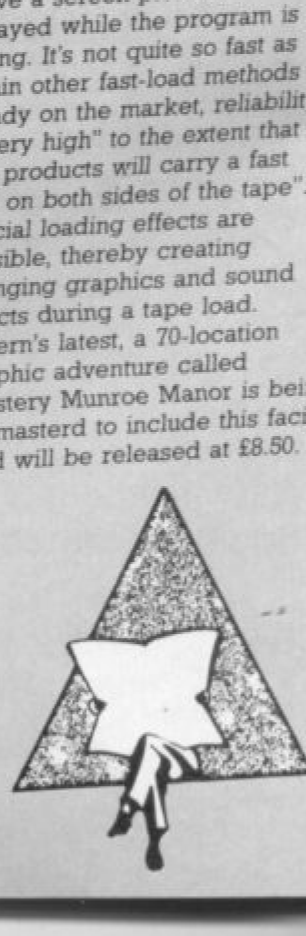
Although the ASA accepts that the advertiser "is entirely responsible for contravening the Code", it throws a brickbat at the media which should ensure advertisements are not only acceptable for publication but that delivery dates can be fulfilled. In short, "Plenty of scope for improvement", chides the ASA.

SHORTS

Four for the price of one? *Bubble Bus is releasing a disk compilation of four of the company's best selling 'serious' programs – the WORD WIZARD word processor, LABEL PRINTER for storage, retrieval and printing of labels, POSTER PRINTER (prints special large character set for notices etc) and ADVERTISER – which turns the 64 into a moving musical message display machine. At the low retail price of £14.95 Bubble Bus plans to enhance its image of high-quality at good value for money (it says here). Can't be bad, though. The bundle is being called QUADRILLION–sounds more like a musical game. Info, 0732 355962.*

SHORTS

Watch and Wait: *Severn Software reckons it has a first for 64 games – a high-speed loading method incorporating the ability to have a screen picture displayed while the program is loading. It's not quite so fast as certain other fast-load methods already on the market, reliability is "very high" to the extent that "our products will carry a fast load on both sides of the tape". Special loading effects are possible, thereby creating changing graphics and sound effects during a tape load. Severn's latest, a 70-location graphic adventure called Mystery Munroe Manor is being re-masterd to include this facility and will be released at £8.50.*





CREATIVE SPARKS strikes again on VIC 20

These six new games written in 100 per cent machine code, set high standards of playability and really make the most of everything the Vic has to offer. Games of action and strategy, great graphics, glorious colour and full sound effects. Try Submarine Commander, Tower of Evil or Mine Madness and you'll want to try all six.

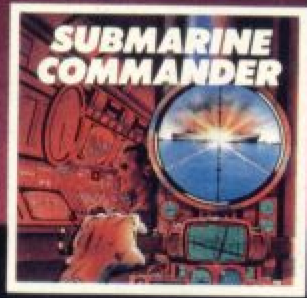
You should be able to find these games from Creative Sparks at leading retail outlets but in case of difficulty complete the form below.



All action game with strong strategic element. Penetrate the enemy defences and blow up the ammunition and fuel dumps.

This great game features:
- Superb sound and graphics.
- Smooth action scrolling screen.
- Joystick or keyboard operation.
- One or two player game.

Requires 8K RAM expansion.
Cassette **£5.95**



Attack and destroy all enemy shipping. That is your brief in this exciting game of strategy. Can you stand the nerve tingling action spread over three screens provided by this amazing game.

Already a big hit in the USA.

Superb scrolling screen in periscope mode.

Nine pre-selectable levels of play.

Keyboard or joystick operation.

Requires 16K RAM expansion.
Cassette **£5.95**



Action rages throughout.

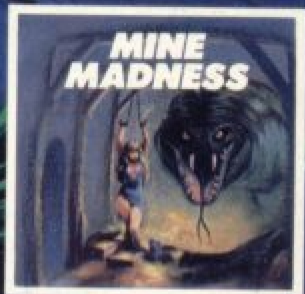
Move from 70 rooms in the maze-like Tower of Evil, inhabited by such evil creatures as the Baphonets and the Warriors of Ayperos. To defend yourself, you throw fireballs from your fingertips on your journey to rescue the princess.

Superb action graphics in this 100% machine code game.

One or two player game.

Joystick or keyboard control.

Requires 8K RAM expansion. Cassette **£5.95**



Gold mining with a very big difference.

Half-crazed monsters and lifts which eerily move up and down of their own accord have to be faced in this unusual game.

Seven levels of play.

High score feature.

Keyboard or joystick operation.

Runs on unexpanded Vic-20.

Instant plug-in cartridge action at cassette prices **£9.95**



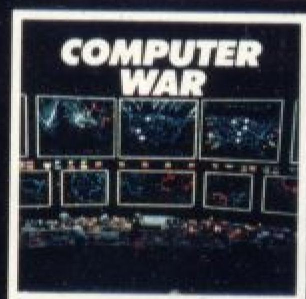
Protect the powerhouse from the crazy mutants with the help of your powerful crossed laser beams. Guide the laser into the mutant burrows to destroy the eggs.

This unusual and exciting game benefits from two screens of all action play.

One or two player game.

Runs on unexpanded Vic-20.

Instant plug-in cartridge action at cassette prices **£9.95**



Based on the hit movie "War Games."

Using both strategy and good shooting destroy the incoming missiles and avoid the holocaust.

An amazing game with superb scrolling landscape when tracking missiles.

High tension play when trying to crack the code.

Keyboard or joystick control.

One player game.

Requires 8K RAM expansion. Cassette **£5.95**

CREATIVE SPARKS

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ANI



G*raphics — This program enables you to paint and draw on the screen by controlling a simulated pencil and brush which can be manoeuvred either by keyboard or joystick. This utility can be used to create and edit background pictures stored in half the normal memory space by use of innovative data compression techniques. Together with its automated drawing techniques; circle, line and centring routines; background colour options; and tape load and save choices; this makes the creation of an artistic wonder possible for ALL USERS.*



A*nimation — The animation utility allows easy manipulation of sprite data pictures, several sprite designs, and a multitude of musical compositions and everyday sounds. This facility is a compilation of all the facets of the graphic and sound utilities.*



Sound — This section of the package turns your Commodore 64 into an intelligent synthesiser on which you can choose to play solo or duet on a piano, organ, harpsicord, xylophone, harp, bagpipe, harmonica, violin, banjo and flute with variable tempo and pitch. The sound routine includes replay, store, fetch, load and append options, so making the composition of superb audio effects an extremely simple task.

3 New Utilities from ANIROG in One Package GAS-KIT-64

Develop the artistic and musical capabilities of your Commodore 64 with an astounding extension of its Basic by 23 commands, allowing you to use the monitor as a canvas to generate high resolution pictures and the keyboard to compose music for your own programs/entertainment. This completely interactive package enables you to create masterpieces quickly thus shortening and simplifying program writing. For instance, create a work of art to use as a backcloth, add your sprites, then compose a musical piece for background music together with a few everyday sounds, bring them all together, and you've produced an animated cartoon to music in a short time, by use of a simple extended Basic Program. GAS-KIT-64 even allows incomplete tunes and designs to be stored and finished later, and to help you on your way, educational and demonstration programs and help instructions are included together with full menus and picturegrams. When all is complete you can store your productions on your own Basic programs.

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SHORTS

Get out those old games: *OXFAM has launched a major appeal for computer software through its shops in the London area. OXFAM, Britain's leading voluntary organisation in the field of overseas aid and development, recycles all donated goods, clothes, toys, books "whatever people give us." This summer OXFAM is appealing particularly loudly for software, especially games cassettes, for personal and home computers "of whatever type and for whichever make". OXFAM says it would also be grateful to any manufacturer or retailer who could sort out any items which could be spared. Take your surplus goodies into any of OXFAM's shops or contact Bernie McDermott or Liz Shannon on 01- 348 4225.*

SHORTS

Wedge wobble: *Last month's pieces on wedges omitted the kinda vital Basic loader. The routine will appear next issue. Abject apologies.*

SHORTS

Speedier Horace: *Fans of that misshapen character Horace will be pleased to hear that Melbourne House has at long last issued the sequel to Hungry Horace, Horace Goes Skiing, for the Commodore 64. A sneak preview reveals it achieves little more than a combination of Frogger and Skier, sadly.*

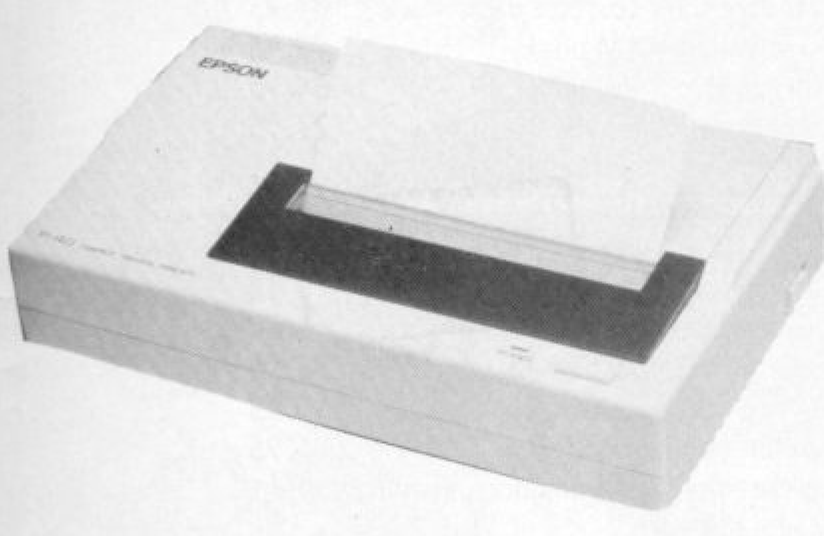
Horace himself must be getting rather long in the tooth but at least the tape itself features 'Pavloda', a routine that speeds up tape loading times to around that of a disk, says Melbourne House. So you can have Horace frolicking around your screen from tape in less than two minutes. Melbourne House kindly explained that the program takes its name from its creator, one Andrew Pavlomanolakos. At least that sounds more imaginative than the ubiquitous 'Turbo', Anirog's similar speed-loader.

SHORTS

Now read on: *Super Blitz, Commodore's Vic and 64 game proves to have a rather special quality: it is helping dyslexic children to overcome their learning disability. A teacher apparently wrote to Commodore to say that Super Blitz has helped her pupils and her own severely dyslexic son to develop the correct scanning habits associated with reading. The game is a City Bomber clone, an aircraft bombing a city of skyscrapers in which King Kong is hiding. It seems the program's teaching value is in the movement of the plane across the screen: as the child concentrates on following the plane from left to right, moving down a space with each pass, he or she follows the correct tracking for reading and does not suffer from erratic eye motions back to the left. It's a cheap one, too – available on cassette at £4.99.*

SHORTS

Exit Anik: *Following a stream of customer complaints we've established that the mail-order games supplier Anik Microsystems has gone bust. We weren't taking any more orders from Anik for adverts anyhow, but that's cold comfort to all those people who saw their cheques cashed and no products arrive. Your chances of getting your money back? Zilch.*



Portable print

The trouble with the plethora of new low-cost printers now available is that virtually none of them will plug straight into your Vic or 64. To make you even greener with envy of micro owners with sensible interfaces, Epson is launching two new thermal printers, the P-40 and P-80, costing £95 and £160 respectively. Both appear with only RS232 or Centronics interface options.

The P-40 is a portable thermal dot matrix printer small enough to fit inside a briefcase. It prints a respectable 45 characters per second, has rechargable batteries and uses thermal paper (so you don't need print ribbons). Column width is 40 characters but you can get 80 or 20 characters on a line by using the condensed or enlarged print facility. According to Epson, the P-40 should be available by August.

The more expensive P-80 won't be available until October. It is also battery operated and runs at the same speed. Unlike the P-40, it's a truę 80 column model; it prints in both text and graphics mode, has a choice of Pica or Elite styles, and will accept plain paper, using its thermal transfer ribbon cartridge. Both models use only a friction feed mechanism.

To use either of these printers with the Vic or 64, Epson recommends the Centronics parallel printer interface from Impex Designs. It's a simple plug-in-and-print device which includes all Commodore Graphics. That sounds nice 'n easy. Trouble is, it's not exactly a snip at £54.95. That's the current price – Impex may well be reducing it for this year's Commodore Show. Impex is on 01-900 0999.



Dennis Law presented the prize of a CBM 1541 disk drive to high-scoring Steve Northrop of Ilkeston, Derbyshire, for his top game playing on Gridtrap 64 from Livewire. Dennis, himself an owner of a CBM 64 system was amazed when told of Steve's top score of 866,980. The Livewire Hi-Score Competition is free to enter with each copy of Gridtrap 64 and the other Livewire games.

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No, it's not the Vicsoft Customer Complaints Department at work. It's a PR photo promoting a new company called Palace Software which has plans for games based on movies – like The Evil Dead. We've asked for a review copy...

Palace Software is a spin-off from the company that runs the Video Palace in London's Oxford Street, one of the country's biggest vendors of videos (and home computer software too). Other titles promised are jovial little numbers like Basket Case, Halloween and Texas Chainsaw Massacre. Rumour hath it that the Editor's own favourite, a Swedish opus entitled Clockwork Banana, is not among the future goodies.

Totally comprehensible

Thorn EMI has been dabbling with the home computer market to no great effect for a couple of years now. But there are new people and new ambitions at Thorn EMI. And there's a new deal with one of the more interesting US independents among Commodore-based software suppliers.

TOTL Software produces a range of low-cost database, wordprocessing and spelling-checker packages for the 64 – all of which feature a computer-carrying chicken on the box. "There is a product-specific chicken for each of the current software categories", enthuses TOTL.

Continuing this fowl theme, most of the programs come with CHICKSPEED – a facility that TOTL claims, "dramatically increases speed in critical program functions" (we won't be clucking about that until our review copies arrive).

TOTL is an acronym of 'Tuna O' The Land'; which, in turn, is a parody of 'Chicken O' The Sea', elucidates TOTL's blurb. Confused?

Only part of TOTL's range is now being distributed by Thorn EMI (noted for records, tapes, videos – but not for chickens). That company already produces a few tape-based games and cartridges for the Vic and 64, and has now added TOTL's more 'practical' software to its range (with more goodies to follow from various sources, we hear). Unfortunately nearly all the products available come on disk for the 64 ... despite the fact that TOTL's whole range of software caters for both machines. According to Henry Kitchen, Thorn EMI's sales and marketing manager, "we may introduce more of TOTL's range at a later date". Oh goody.

At present Thorn EMI is offering TOTL's Infomaster, a disk-based data-management program costing £49.95. For the money you get a maximum of ten files per disk, 100 fields per record, 248 characters per field and 2,500 characters per record. Features include user-definable report formats and 'templates' which automatically configure the software for a number of different sorting and retrieving tasks. Reportedly it's very good.

Also for the 64 is Text, a disk-based word processing package at £44.95. We haven't yet tried it. That's complemented by a 10,000 word spelling checker, also on disk; that's being priced at £34.95 and is customised for UK rather than Americanisms.

The only product available for both Vic and 64 is Label. That allows you to sort and print mailing lists, catalogues and the like. It has a search and sort facility and integrates with Text for the production of form letters. Obviously the facility is less than useful to Vic owners, for whom Label comes only on tape and costs £19.95. Both tape and disk options are available for the 64, costing £19.95 and £24.95 respectively. More details on 0252 543 333.

SHORTS

Personable: *The Computer Trade Association has voted Rod Cousens of Quicksilva 'Person of the Year' for 1983, "primarily because of his work in promoting the UK software industry." In his capacity as Vice Chairman of the Guild of Software Houses (GOSH), the self-styled watchdog of the industry, Rod has been active throughout 1983 "in his efforts to fight tape piracy and protect consumers' interests" (it says here). He's managing director of Quicksilva, one of the leading games houses.*

SHORTS

Blunders in Screen Scene: *We did an injustice to Romik's Dicky's Diamonds (five stars in the 'value for money' rating) in our June issue. For a start we called it 'Dick's Diamonds'; and we got the price wrong – it's £6.99 not £9.99. Even better value..*

SHORTS

Quick but not dead: *Quicksilva, one of Britain's major home computer software houses, has been acquired by the Argus Press Group – publisher of Computing Today (and other titles) and part of the British Electric Traction Corporation (of course). It seems Quicksilva will reportedly continue to trade under its own name; the company says that financial expansion, forthcoming innovations and "a more intense marketing strategy" will "maintain its position" and enable it to "accelerate its activities and diversify into new technological areas".*

Bus Shop repairs

GCS Bus Shops are the latest idea in computer repairs, and it's a simple one at that. You merely hand your computer over the counter at any Bus Shop and an engineer will identify and rectify minor faults there and then. For more complicated repairs, he'll tell you when the machine will be ready. Just like going to the dry-cleaners really.

GCS Engineering is one of the country's larger maintenance organisations dealing largely with minicomputers and business micros. But its Bus Shops will give equal service to both home and business micros. So you can quite happily bring along your humble Vic, 64, Pet and any peripherals for a quick fix.

Prices are a standard £15 per hour with an extra charge for spare parts, and all work is guaranteed. Paul Alexander of GCS asserts "it's company policy that machines must be fixed within 48 hours unless we have problems with spare parts" – GCS buys spares direct from Commodore.

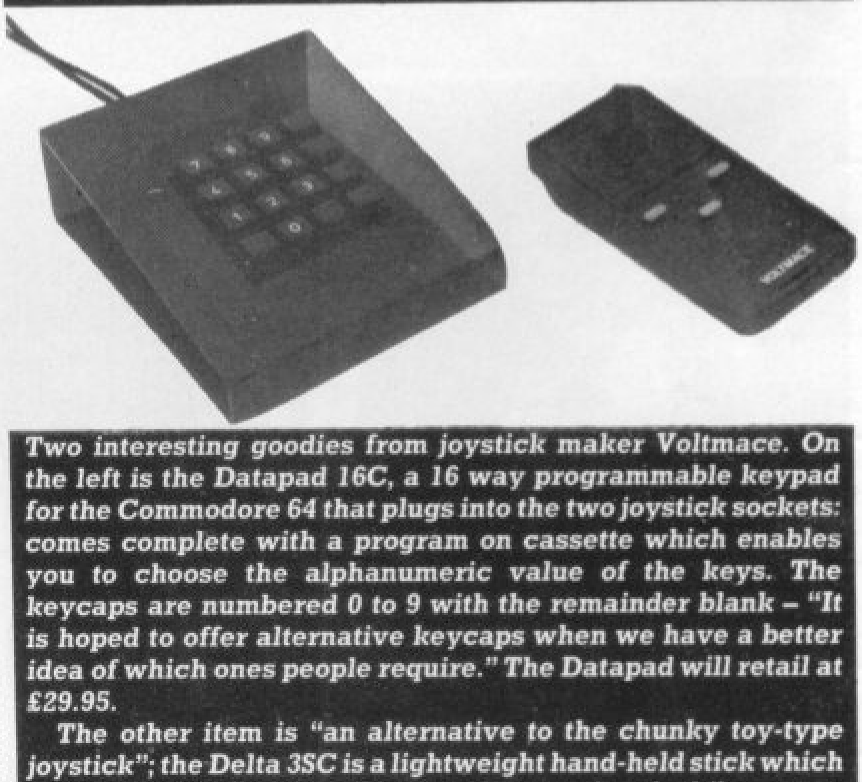
Bus Shops have already opened in Sheffield, Altrincham, Basildon, Feltham and Chester, with plans for more in Birmingham, Manchester, Bristol and Airdrie. The latest to open is inside the Micro Systems at Lion House store on London's Tottenham Court Road. Lion House is opening more shops in the Central London area which will also incorporate Bus Shop facilities. Looks like being a Good Thing considering that Commodore's own repairs are slightly less than speedy.

SHORTS

More micros: *Home computer ownership has more than doubled in Britain during the past year and the market looks set for further record growth, says a market survey published a couple of months ago – more than one home in ten had a micro-computer in January 1984, 11 per cent of households compared with 4.9 per cent in January last year. Sinclair and Commodore currently dominate the hardware market – and the top six models listed in the report account for 87 per cent of micros now in use, and the report asserts that it's difficult to see any long-term future for less popular models or for new entrants unless they can offer some important advantage. On the other hand, the software market looks set for its best year ever in 1984, with arcade and adventure games likely to take 70 per cent of total sales.*



A bit weird, maybe, but this is Intelligent Interfaces' Syscon 6 – which enables Commodore peripherals to be used with the BBC Microcomputer as though they were standard floppy disks and printers. A specially-written disk filing system and printer driver routines are supplied in ROM, which makes the operation of Commodore peripherals totally transparent to the user of the computer – programs written for BBC disks and printers can generally be used without modification with Commodore kit. Doesn't work with the 1541 but should be of value to anyone who used Pets in the past and now has a BBC computer with the Commodore peripherals still available. The price is £156, the contact point is 0789 296879.



Two interesting goodies from joystick maker Voltmace. On the left is the Datapad 16C, a 16 way programmable keypad for the Commodore 64 that plugs into the two joystick sockets: comes complete with a program on cassette which enables you to choose the alphanumeric value of the keys. The keycaps are numbered 0 to 9 with the remainder blank – "It is hoped to offer alternative keycaps when we have a better idea of which ones people require." The Datapad will retail at £29.95.

The other item is "an alternative to the chunky toy-type joystick"; the Delta 3SC is a lightweight hand-held stick which should be more comfortable (hold it in one hand while operating it with the fingertips of the other hand). The switches are rotary slide switches and take no pressure "however hard you push on the joystick". The three fire buttons have been tested to millions of operations, says Voltmace. The Delta 3SC will cost £10.

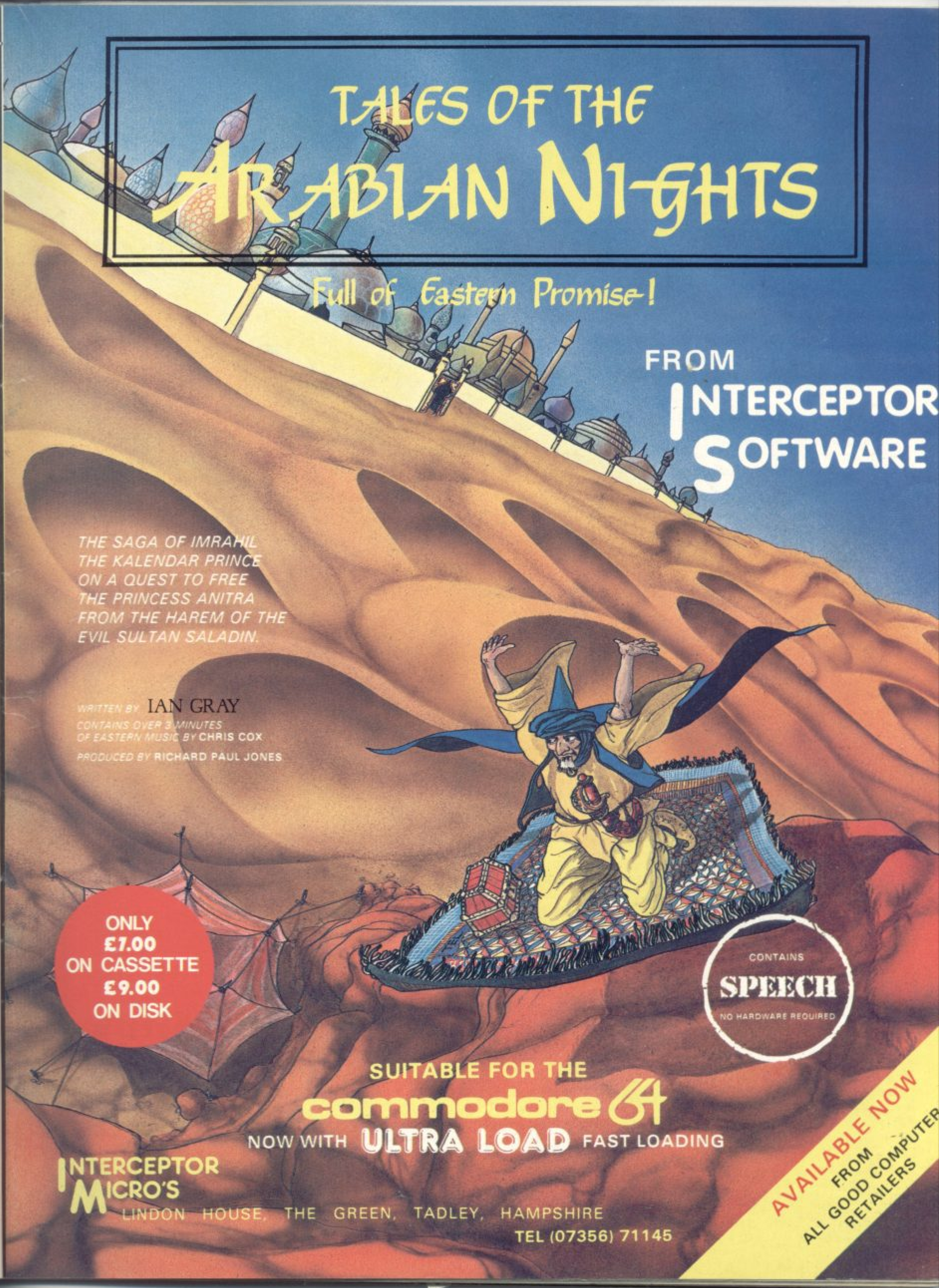
We've requested review units. Meanwhile, info from Voltmace at 0462 894410.



This is the US-derived Data 20 parallel interface, now on offer in the UK from Impex (01-900 0999). "The easiest way to use a parallel printer with a Commodore computer" says Impex, though it's hardly alone in this field – at 5p under £55 it's not the cheapest, either. But Data 20 products have a good reputation, there's some commendably high technology in the gismo (CMOS), and it's quite clever: for intelligent printers with programmable characters sets, the interface has a pass-through mode where the ASCII conversion is disabled. Otherwise it appears to the system as a 1525 printer, translates the Commodore character set to ASCII and passes through graphics characters. CSMOS means it doesn't use power from the computer, the printer, or any external supply source. Looks good, and sounds easy to use – simply plug it in, no software to load or switches to configure.

SHORTS

Comal quip: *Brian Grainger's COMAL series is apparently generating a fantastic response. So you might like to know about the COMAL Users Group at 5501 Groveland Terrace, Madison, WI 53716, USA –they appear to be well-organised, and certainly have a lot of COMAL goodies to sell at basement prices. Including a disk COMAL for the 64 at only $19.95...*


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Hard copy for Commodore

The MPS-801 printer reviewed

by Ken Ryder

When choosing any printer for your Commodore computer the software you intend to run should be taken into account. Why? Because many low-cost software packages such as Abracalc and Easy CalcResult support only Commodore printers.

Word processing is a little bit pointless without a printer. In fact Commodore's disk drive offer including Easyscript for free is a great way to sell printers! But the advantages of adding a printer to your Vic-20 or 64 are numerous.

It is far more convenient to read and modify a program listing on paper than to scan through it twenty-odd lines at a time on screen. For small amounts of data it is often quicker to look through a hard copy of records, than power up the computer, load the program, load the data and then access the information – particularly if it is all on cassette.

For example records of names and addresses can be kept in a book of printout next to the telephone. The records are maintained on the computer, and the book updated via the printer as changes occur. The same goes for other records, such as a diary, or financial statements.

Commodore has discontinued the 1515 and 1525 printers in favour of the MPS-801 dot matrix printer. At 30 characters per second tops the 1515 was slow and noisy, using narrow non-standard paper too: the 1525 had a standard paper width but was no faster.

Both printers cost £230 when first introduced. The MPS-801 costs the same; but for that you get a faster print speed (50cps) with a reduced noise level, and modern styling.

What you get

A power cable and serial communications cable are provided. The power cable is a respectable two metres long, but sadly lacks a plug.

The ribbon is supplied in a plastic cartridge with an easily replaced ink pad: so you don't have to replace the whole cartridge when the print fades, just the inker. At £6.90 per cartridge including VAT this is just as well; Commodore was unable to give me a price for the inkers, which tells you something about their availability ... The cartridge is more convenient than the long ribbon and two reels supplied with the 1515 and 1525.

The documentation indicates that the cartridge should be easy to insert. There is certainly plenty of room to work in, as the front cover is easily removed. But a tension knob must be rotated to locate on to a lug as the cartridge is pushed into place: I found this a little awkward, and the cartridge did not snap into place as indicated – some manipulation of the retaining clips was needed finally to locate it.

Documentation

The documentation is to Commodore's usual pitiful standard. The 44-page typeset booklet is the same A5 size as the manual supplied with the Vic and 64. The instructions start with a general description of the printer, photographs pointing out the main features,(the power lead is shown with a plug). This is immediately followed by a description of the serial interface, the device selection switch and a cursory mention of secondary addresses – all before the booklet describes the fitting and removal of the ribbon cartridge.

Paper loading is not so well covered. When the printer arrives the tractor feeders and central rubber support are positioned at the far left of printer and must be dragged along the hexagonal bar which drives them. They are only held by friction, and the paper is inserted under a hinged plastic flap which separates incoming paper from the outgoing. This flap can be removed to ease paper loading; but that wasn't mentioned and I only discovered it when it came off in my hand!

I would like to have seen an alternative slot in the base of the printer for bottom entry feed. This is usually found on more expensive printers and provides for a more direct paper flow, usually through a slot in a desk.(Though this would be a drastic modification to the dining room table, the printer could be stood on a plinth astride a box of paper – the output could then be collected behind the printer).

As paper feed and output is through the back you would expect the rear of the printer to be free of obstruction. Instead the two serial ports are located in the rear together with the device selection switch. They are positioned about 2in from the right hand edge of the paper.

The two serial ports are provided so that several devices can be daisychained together. The device selection switch has three positions: two set the device number to be 4 or 5, the third position tests the printer head by printing out the character set continuously. Two device numbers enables you to run two printers connected simultaneously – say one daisywheel for word processing, one dot matrix for graphics (hang the expense).

Direct connection of the printer to the computer is described in the booklet but no mention is made of daisychaining via a disk drive.

Then comes a classic mistake which describes the movement of the printer head on power-up. The documentation indicates that the head should move once to the centre of the carriage and then return to its original position. In fact it moves a quarter of the way twice. This kind of thing could lead you to think that something is wrong with your new acquisition.

This error is almost as good as the one in the disk drive manual which firmly instructs the user not to open the drive door while the green light is on. The green light is always on: the reference should be *red* light, of course.

Section 3 describes how to direct output to the printer with the OPEN, CMD, PRINT# and CLOSE commands, both direct and under program control. The secondary address can be used to set the character set available – graphics-and-upper-case mode, or upper-and-lower-case. These are called 'cursor up' and 'cursor down' modes, which is misleading; in fact the instructions are generally disjointed or vague, riddled with spelling mistakes and missing words. Whoever proof-reads these manuals must be intending to flood the market with authoritative books on Commodore products ...

Printing

Several printer modes are available, and are set with a CHR$ code (see table 2). Printing can be performed in one of two character sets, just like the 64 or Vic themselves – except that *both* character sets can be used in the same line.

Both sets may be normal or reverse text; the latter is particularly useful for emphasis. In addition all the characters in either mode can be printed double-width, which is useful for titles (double-width reversed characters are also available).

The versatility of the printer lies in its ability to mix modes freely. For instance, double-width upper-case reverse characters can be combined with normal-size lower-case text starting at a given dot position.

The Basic TAB statement does not work properly with the PRINT# statement. Instead a character code, CHRS(16), sets the tabs for the printer head. The print head will move to the specified column and start printing.

There are 80 columns of characters and each character is made up of six columns of dots, giving a grand total of 480 individual dots in a row. Printing can be started at any individual dot position: see the sine curve example for just how good this is.

User-defined characters

The advantage of a dot matrix over a daisywheel printer is its ability to produce characters to the user's own design, such as logos of Greek symbols within formulae.

Printers

This is done in a similar manner to user definable graphics on the Vic or 64, but the grid is limited to 6 x 7. Again, these characters can be mixed with standard characters.

The other great advantage of dot matrix printers is their ability to draw pictures. With suitable software the user-definable graphics option can be used to take a hard copy of a high-resolution screen. This is not even hinted at in the documentation, naturally.

The last graphic mode allows a single row of seven dots on the print head to be repeated a given number of times. This is useful for underlining, or producing horizontal bar charts.

Controls

The styling of the printer is neat, certainly a contrast to the functional look of the 1515 and 1525. Except for the previously-mentioned selection switch and cable sockets, all the controls are well positioned and convenient to use. A green light glows through the top of the casing indicating that power is on. The light is next to a rectangular area on the casing about the size of the Commodore shift key. Slight pressure on this rectangle causes the paper to advance one line at a time until pressure is released. Alternatively the paper can be advanced manually by a large handle on the carriage, which is much more convenient than the thumbwheel provided on the 15215. 1515.

In conclusion

The lack of true descenders and its restriction to sprocketed paper feed obviously makes it unsatisfactory for good-quality word processing; but the MPS-801 could be used for something like club correspondence where the recipients may not be too fussy.

The printer is a neat good-quality piece of kit, using readily-available standard-size paper (about £14 per 2,000 sheets). It is eminently suitable for program listings or address labels in upper case.

Shame that such a versatile product is supplied with poor documentation.

Character matrix	6 x 7 dot matrix
Characters	Upper/lower case characters, numerals, symbols, and Pet graphic characters
Graphics	Dot-addressable; 7 vertical dots per column, max 480 columns
Character codes	CBM ASCII CODE
Character size	Height: 7 dots (2.82mm) Width: 6 dots (2.53mm)
Print speed	50 cps (left to right, unidirectional)
Max. number of columns	80
Character spacing	10 characters per inch
Line feed spacing	6 lines per inch 'Character mode' 9 lines per inch 'Graphics mode'
Line feed speed	5 line feeds per sec 'Character mode' 7.5 line speeds per sec 'Graphic mode'
Paper feed	Pin feed
Paper width	4.5 to 10in width (inclusive of tractor feed holes): 8½in width (after tractor hole removed)
Multiple copies	2 including original
Ribbon	Single colour, inked roller built-in, cassette type
Dimensions	237D x 438W x 115H mm
Weight	Approximately 4.8kg

Figure 1: Specification of the MPS-801

Enter graphic mode	CHR$(8)
Line feed after printing	CHR$(10)
Carriage return	CHR$(13)
Enter double-width character mode	CHR$(14)
Enter standard character mode	CHR$(15)
Tab setting	CHR$(16)
Enter cursor-down mode	CHR$(17)
Start reverse-field	CHR$(18)
Repeat graphics selected	CHR$(26)
Specify dot address (must follow printhead tab code)	CHR$(27)
Enter cursor-up mode	CHR$(145)
Turn off reverse-field	CHR$(146)

Figure 2: CHR$ controls

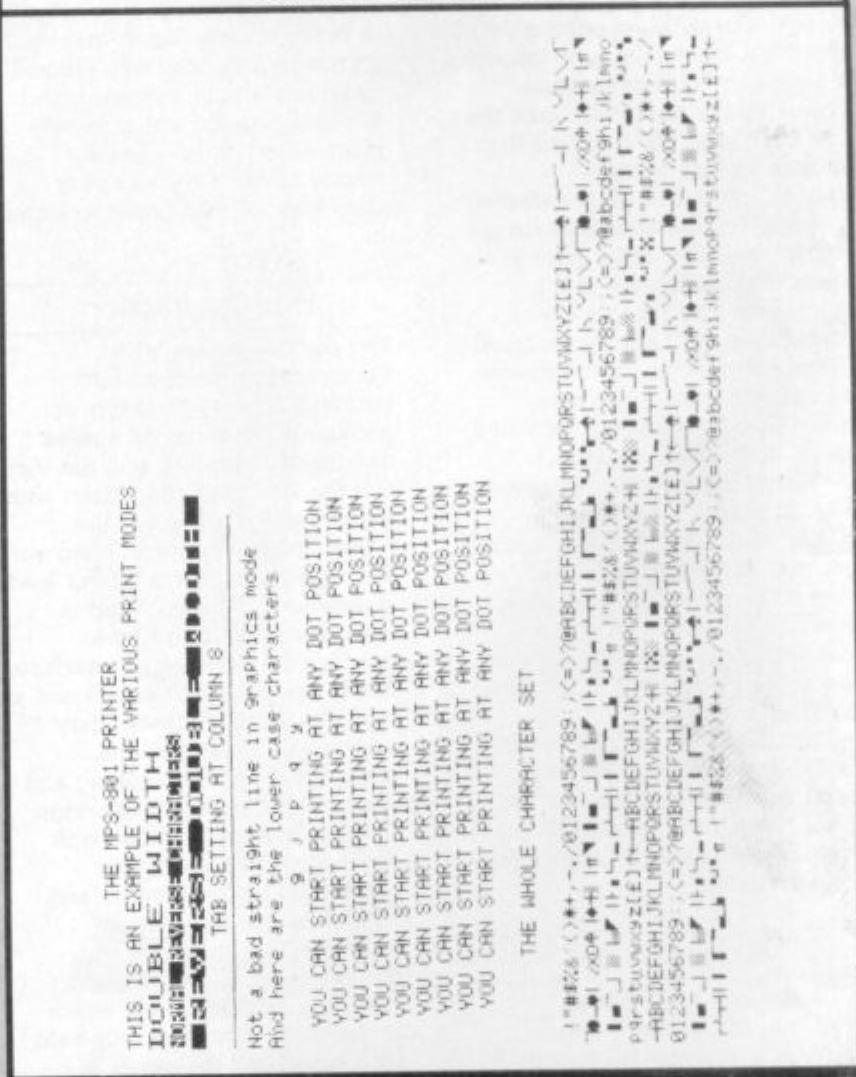


Figure 3: Print sample

Under review	**MPS-801**
Description:	**dot matrix printer for Vic and 64**
Supplier:	**Commodore Business Machines**
Address:	**675 Ajax Avenue Slough Berkshire (via dealers)**
Telephone:	**Slough 74111**
Summary:	**Neat, ok performance: a great improvement on the 1515/1525**
Price:	**£230**



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The Rotronics Portable Case

Here is the ideal portable work station for home, school or work. Specially made for most home microcomputers, it contains your VIC 20 or CBM 64 within a smart executive style case with removable lid for convenience in use.

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All components remain fully operational within the case via inter-connections routed between the double layers of foam, so there are no unsightly leads.

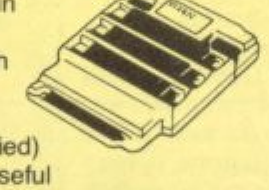
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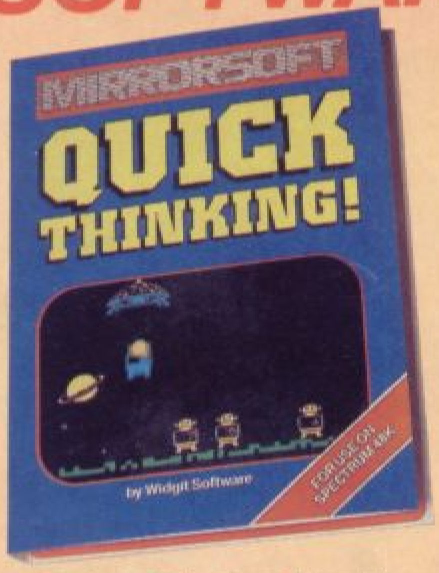
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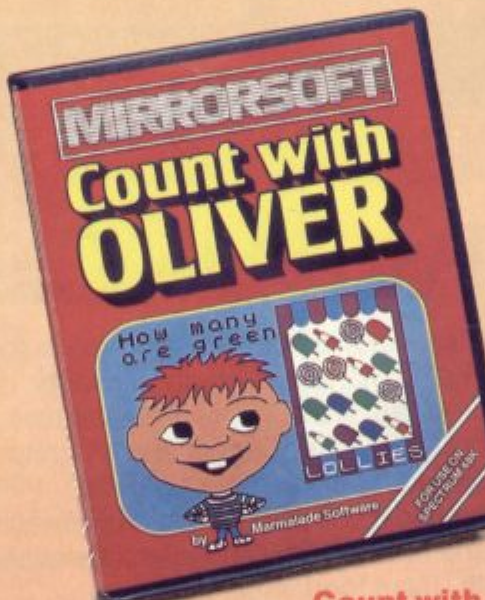
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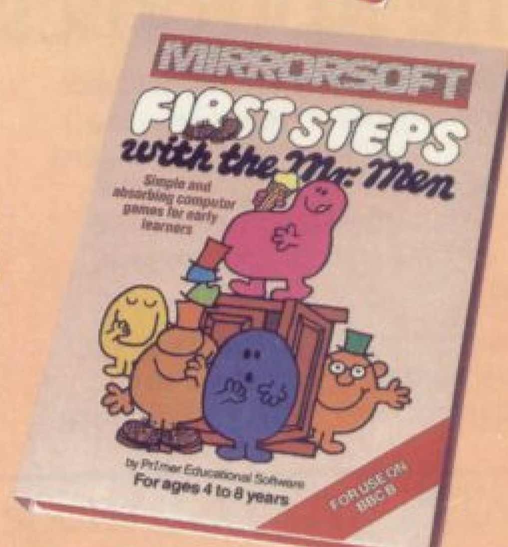


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TOMMY'S TIPS

Tommy is Commodore User's resident know-all. Each month he burrows through a mountain of readers' mail and emerges with a handful of choice queries. The result, before you, is a wadge of priceless information and indispensable advice. There's even the odd useful tip as well.



Dear Tommy, My friend lent me a tape of *Wacky Waiters*. To my amazement it failed to load. All I got was the computer searching right through the tape as if there was nothing. On trying again I got an error. This has also happened when trying another tape.

I am puzzled by this and would be grateful for a solution.

I assume that the same tape *did* load on your friend's machine; in which case we can rule out a faulty tape (they do occur).

The first thing to do is make sure that your tape heads and the pinch roller are all clean. It is a good idea to invest in one of the 'tape head cleaner and de-magnetiser' tapes you can buy from Smiths or Boots etc and use it once a week, under normal use. Alternatively, clean the heads with a cotton bud soaked in a commercial head cleaner fluid (you can get it at most Hi-Fi shops).

If this still does not solve the problem then it is possible that your tape heads are out of alignment. If you can save and load your own tapes without difficulty, but are unable to load anyone else's tapes then this is almost certainly the problem.

It is possible to rectify this yourself if you know what you are doing; otherwise you should take your recorder to your dealer (especially if it is still under guarantee) and ask him to set it up properly for you.

Dear Tommy, I wonder if you can help me. I've got this problem with my Commodore 64: I cannot get it to understand the word PLOT, it just doesn't want to. I've tried everything I can think of but with no success. I've looked in the manual but I just can't find out how to do it. Then I found in the manual a bit that told you how to put a dot on the colour memory map by POKEing these numbers:- 1524, 81 and 55796,2. I tried these and they worked; so then I started to play about with them, but with no success. Could you give me the solution for this problem?

The simple fact is that there is no such command in Commodore Basic as 'PLOT' (oh, would that there were!). Unless you buy one of the many extensions to Basic which include this command, or something similar, there is no way you can plot points on the screen in Basic without using lots of POKE commands.

What the two POKEs you have quoted do is to print not a dot but the round ball character (Shift Q) in row 13, column 20: then they set the corresponding location in the colour map to Red.

If you want to go into high-resolution mode to plot lines or even single dots, life gets rather complicated; basically you have to set up a hi-res screen area which occupies 8000 bytes of RAM. Basic can be used to plot lines and suchlike, but it is extremely slow — machine code is the only real answer for anything like high-speed plotting.

If you are really interested in pursuing this then it might be worth your while buying the *Programmers Reference Manual* (£10); this contains at least some hints on using the bit-mapped mode for graphics plotting. Alternatively, why not purchase one of the Basic extensions which will allow you to 'PLOT' to your heart's content?

Dear Tommy, The display on my C64 is flickering whenever the computer is parked in a input or a wait or similar endless loop. Small twinkles appear around characters like D, E and F although the rest appear normal. However — if the character set is moved to RAM, then all characters appear normal and without flicker. What could be the cause of that?

The C64 seems to have a strange bug. Press both cursor-keys permanently and then press the shift-key repeatedly. You should then be able to observe some spades on the screen, if yours has the same bug.

It is possible to load Vic-programs into the 64 via the cassette unit. You only have to diminish the motor-speed a little. This is done very easily by mounting a 27 to 31 OHM resistance in serial with the cassette-motor's power supply cord. You will have to experiment a little in order to find the correct value — unless you prefer an adjustable potentiometer. Perhaps it would be a good idea to mount a switch so you could switch the resistor(s) in and out as needed.

The flickering is caused by the swapping in and out of the ROM-based character set. The ROM area overlays the same address as part of the RAM; whenever the computer prints a character it has to access the ROM to do it by swopping the ROM area into the memory map. It is this constant changing that causes at least some of the flickering you can see.

When you tell the computer that the character set is in RAM, it doesn't need to swop the ROM set in and out; hence you get no flicker.

I am afraid that your 64 does not have a bug; all 64s will produce characters if you press certain combinations of keys simultaneously. This is because the keyboard does not have individual lines to each key – instead the keys are connected in a 'matrix' of rows and columns. When the computer receives the signals on the different wires, it translates these into a unique key position in the matrix. By pressing more than one key at a time (other than shift etc) you are just fooling the computer into translating that combination of signals into a completely wrong key position. Most of the combinations are meaningless and produce no character as a result; some however, reproduce the combination which a valid key would generate. You therefore get the same effect as if you had pressed just that key.

Dear Tommy, I have recently purchased a Commodore Vic-20 and I wish to expand the memory. Could you please advise me on which kind of memory pack to get? I have seen advertised a Super Expander, a 64K RAM pack switchable, 32K RAM pack switchable and a 16K standard; could you please tell me what is the meaning of Super Expander, switchable RAM pack and standard RAM? And what are the drawbacks and advantages of each? If I expanded to 64K could I run games and programmes meant for a Commodore 64? Could the RAM packs and Super Expander plug into the computer itself? Or does it need an interpod? What is meant by block 1 or 2 or 5? And what is a Mother Board?

These may seem simple questions but I don't know anyone who can answer them for me. I eagerly await your reply.

P.S. What is Hi-Res Graphics? And I have seen plenty of ads for 32K RAM packs but none for 64K. Could you please tell me anyone who stocks this?

Wow, where to start? Basically the Vic's memory map has a number of 'slots' for extra memory. There is a 3K 'slot' which can be filled by any 3K RAM pack, which includes the Super Expander (this also gives additional commands in BASIC to make plotting and sound much easier to control). There are also three 8K 'slots' and it is here that the blocks come in; Blocks 1, 2 and 3 are the three 8K RAM expansion areas, while block 5 is the area of memory reserved for ROM cartridges (an 8K RAM pack can also occupy this area, but cannot be used for BASIC).

The various 'switchable' packs merely allow you to select which blocks of memory you wish to use; some '32K' packs include a 3K RAM option as well, but you should be aware that you can either have 3K extra RAM or up to 24K extra RAM for BASIC programs, but not both at the same time. For machine code however, up to an extra 35K RAM

Tommy's Tips

can be accessed.

As for using a 64K RAM pack, that will not allow you to run games intended for a 64 unless they don't use sprites, sound or contain any PEEK and POKE commands – highly unlikely in practice.

The Super Expander will allow high-res graphics which is a fancy way of saying you can 'draw' lines etc anywhere on the screen and if all you want is a little more memory to run larger programs then a standard 16K RAM pack will probably be quite adequate.

As for the motherboard, this allows you to plug in two or more cartridges at the same time; you will gather from this that you will need one if you want to use the Super Expander with 16K extra RAM.

Dear Tommy, I own a Vic-20 with a standard Vic-20 16K RAM pack. When the RAM pack is added the total memory comes to 19967 bytes. I have seen several routines in your magazine for conversion from 16K to 3K or unexpanded. I have tried these and they do work, well nearly anyway.

That is where my problem comes in. After entering the necessary POKEs to reconfigure my Vic, I cannot seem to enter any programs. I can key in the first line of a program but as soon as I press return the keys become unfunctionable and thus I cannot enter what I would like to. What is wrong?

You have made an assumption that unfortunately is not valid, and that is that reconfiguring the Vic actually moves the memory to a different location. The 16K RAM pack fits into the memory map between locations 8192 and 24575. A 3K RAM pack fits into memory between 1024 and 4095. When you fit a 16K RAM pack into the Vic it automatically changes the memory map, isolating the 3K RAM area. All the convertion program does is to fool the Vic into thinking that the 16K RAM pack isn't there and resets the memory pointers to include the 3K RAM area again. Unless you actually have a 3K RAM pack fitted what you have done by running the convertion program is to try to store your program in a large hole in the memory; the Vic will assume that the memory is there because you told it it was! However, you should still be able to run the conversion to give an unexpanded Vic without problem, so if you get trouble with this as well you should check your programs very carefully for any errors.

Dear Tommy, I am in the process of writing my first adventure and I have two questions — which, if you have time to answer, will enable me to complete it.

1) How can I get my Vic to recognise how many words are in an input statement? For instance if the user has entered three words into a variable and the adventure game uses only 1 or 2 words, how can I get the computer to recognize the mistake and tell the user about the error?

2) In writing the program, which would be more suitable to use:

```
10 INPUT R$
20 IF R$="GO ROOM" THEN?
"OK"
```

... or ...

```
10 A$="GO ROOM"
20 INPUT R$
30 IF R$=A$ THEN
PRINT"OK"
```

The first problem can be solved by checking how many spaces there are; thus if there are only two words you should only find one space and so on. The following short piece of code will do just that:

```
1000 SP=0:S$=""
1010 GET A$: IF A$="" THEN
     1010
1020 IF A$=" " THEN SP = SP
     + 1
1030 PRINT A$: IF A$ <>
     CHR$(13) THEN S$ = S$
     + A$: GOTO 1010
1040 IF SP > 1 THEN PRINT
     "ERROR – TOO MANY
     WORDS"
```

This is a simple solution and would fail if the player stuck an extra space at the end of the line by mistake. You can improve the code by checking to see if the space is the last character of the string and ignoring it if it is. If you used the above as a subroutine, on return the variable S$ would contain the input string for you to work on as normal.

That brings me nicely on to your second point; using the first method will mean you have to write out all the tests for the strings in full. This is fine for one or two, but is less than perfect if you have to check 100 or even 20. If you combine your second method with an array of valid words then you can set A$ equal to each part of the string in turn and check what the first word is, then the second, see if they are a valid combination and only act if they are. This will give you much more flexibility to alter or expand the game later on (eg 'GO' can precede N,S,E or W, but later on you may want to expand the game to allow SE,SW,NE and NW).

Good luck with the adventure-writing, anyway!

Dear Tommy, I wonder if you can offer any help with the following problem. I have a Vic-20 and an Epson RX80 F/T printer. I realize that the printer will not deal with all the Commodore graphics; but I cannot even send the correct commands to make the printer type lower case letters. Is there a way to do this.

I also find that if I type 'PRINT#' in full the computer ignores the command; but if I type 'P (shift)' the computer responds. Why should this be?

Finally the program for the Vic-20/Epson FX80 appears to have a mistake in line 137. What should this line read, please?

One problem with answering this sort of query is that it depends on which interface you are using to run your printer. Commodore printers require a specific secondary address when opening the print channel in order to print lower case; most printer interfaces also need a specific 'command' when opening the print channel before you can get both upper and lower case.

The reason for this is that the Commodore character set is not standard ASCII. In normal mode the letters are all upper case with graphics symbols in place of shifted letters. Most interfaces do a conversion from Commodore to ASCII when sending characters to the printer. All the interfaces I have seen either have a hardware switch or a software selection method which determines whether or not this conversion is done.

I suggest you re-read the manual (or whatever) that came with your interface; there should be something there to help you.

Your second problem is rather puzzling. When you say the computer 'ignores' the command, do you mean you just don't get any printout? As far as the computer is concerned, 'PRINT#4' and 'P(shift R)4' are the same command; if one works, they both should. Ask your dealer if you can try the commands on another machine — if yours does not work the same way as his, I suggest you take it in for repair! The only other possibility is that your software printer interface has a bug in it; in this case the problem will arise whichever machine you try it on.

With regard to line 137 of the Vic/Epson program printed in our December 1983 issue, I don't know what you thought it should be: but I assure you it is perfectly correct. What it is doing is setting up an array with the values of 2 to the power X (where X is stepped from 0 to 7). This is used later in the program to 'mask off' the 'bits' of an address one at a time, in line 180. If it is the up-arrow symbol that confuses you it is the key to the right of the '*'

Dear Tommy, Could you please tell me if it is possible to get programs written on the Vic to run on the 64. I am considering upgrading to a 64 and I am wondering whether I could adapt the programs I have written on the Vic without too much difficulty.

It all depends upon how you have written them. Basic programs should run without too much trouble (provided you have not filled them with PEEKs and POKEs) because the two Basics are identical. The major change here is to accomodate the fact that the 64 has a 40-column screen, so you will want to alter your screen displays to make them look nice with a different format.

It is the PEEKs and POKEs which, as always, cause the problems. Fortunately, Commodore have gone to some lengths to make your job as easy as possible here. POKEs into locations below 1024 are likely to be unchanged. The screen memory now starts at 1024, and the corresponding colour area is 55296.

The procedures for high-resolution graphics and sound have

Dear Tommy, You have written about the Whitby Softchip for the 64; and I would like to know how much RAM this would take up. I understand that any program written using the extra Basic commands cannot be entered into the computer without this cartridge being inserted into the computer.

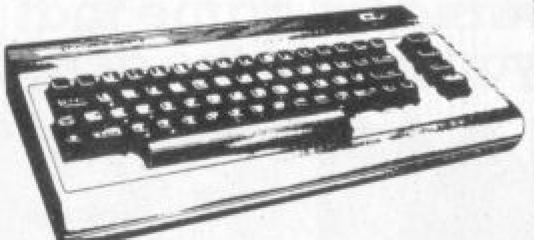
The Whitby Softchip takes up 8192 bytes of memory, leaving you with 30717 bytes free. You can still enter a program into the 64 without the Softchip plugged in, but if you try to run it you will get a SYNTAX ERROR from the added commands.

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BOOK LOOK

Commodores and Kids

Books and programs for children

reviews by Clive Bulmer and Colleen Young

Home Computers are a natural for kids, feeding their inquisitiveness while featuring enough sound and graphics effects to keep them interested.

There are a growing number of books and programs designed specifically for kids – and specifically for kids with Commodore computers. We collected a few of them and invited a couple of professional teachers to comment.

Computer Playground is a collection of computer activities intended for children up to about eleven years old. "Each activity is presented as a problem in a workbook, encouraging the user to learn how to use many features of the Basic language. In doing so, the child will also build up a collection of programs which are both understood and entertaining". Well, that's the theory behind this publication.

To find out how much of this blurb was true, I loaned the book to a colleague, who happens to have a young child and a Commodore 64: I also checked it out on my own daughter.

Both found this book excellent, especially in the way it is presented. The print is clear; the instructions are very straightforward to follow; the use of colour is also effective from the point of view of a child. The only criticism any of us made about this book was its actual shape – though I feel it to be just right: a book aimed at such young readers does not need to look like a manual!

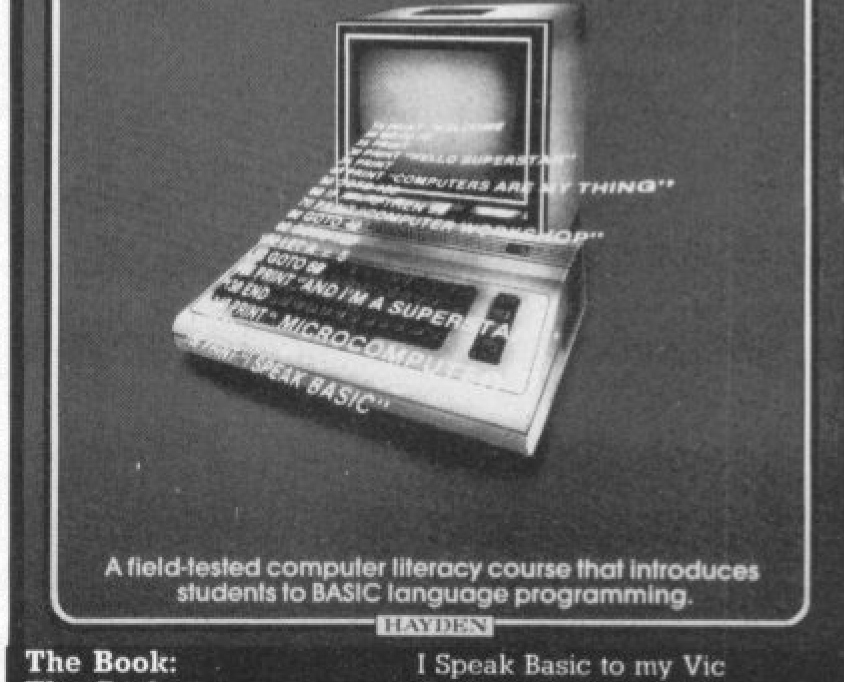
Perhaps the only serious caveat on this otherwise excellent book is its rather high price, inevitable perhaps for an import. But the satisfaction and joy that *Computer Playground* should give to its young readers – who couldn't fail to be absorbed by its pages – more than justifies the £12.70.

Computer Playground



The Book:	Computer Playground
The Author:	M.J. Winter
The Publisher:	Datamost (various UK importers)
The Price:	about £12.70
The Reviewer:	Clive Bulmer
The Conclusion:	Excellent, even at that price

I Speak Basic to my Vic



The Book:	I Speak Basic to my Vic
The Author:	Aubrey Jones
The Publisher:	Hayden
The Price:	n/a
The Reviewer:	Clive Bulmer
The Conclusion:	Better for homework than schools

Book

This book is designed to teach Vic Basic to youngsters in the range from 10 to 14 years old. It gives guidance, explanations, exercises, reviews and quizzes; and it does that in a total of 33 lessons, each one being quite well set out and easy to follow.

I have used some of these 'lessons' with small groups during out-of-school activities and found them to be quite well received. Some pupils even wanted to take the book home for self-imposed homework – itself a good pointer to the book's usefulness!

Teachers should find this book of equal interest, though, especially with regard to the various programming sections/areas covered. The only criticisms I can make are the fact that the book is written with much American jargon – but then, it is American, the jargon is not too frequent.

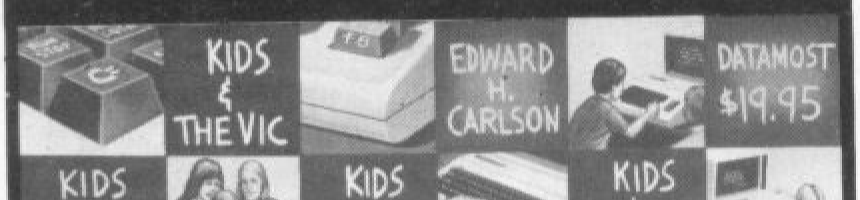
The program listings, although clear, were not produced using a Vic printer; graphic character keys such as 'cursor right' have to be denominated by CR. (*In view of the quality of the 1515's print, that might not be such a bad thing – Ed.*)

The book is spiral-bound, an idea I like though I don't think this a practical idea for use by children in a classroom situation.

To conclude: *Kids and the Vic* is a useful publication, but in my opinion falls short of Tony Noble's offering.

Another American-produced publication, Aubrey Jones' book is aimed primarily at students following a computer course in school. It is accompanied by a teacher's manual which contains suggestions for implementing the course and annotations to aid the teacher in lesson planning. There is also

Kids and the Vic



The Book:	Kids and the Vic
The Author:	Edward Carlson
The Publisher:	Reston/Prentice-Hall
The Price:	£17.95
The Reviewer:	Clive Bulmer
The Conclusion:	Useful but not great

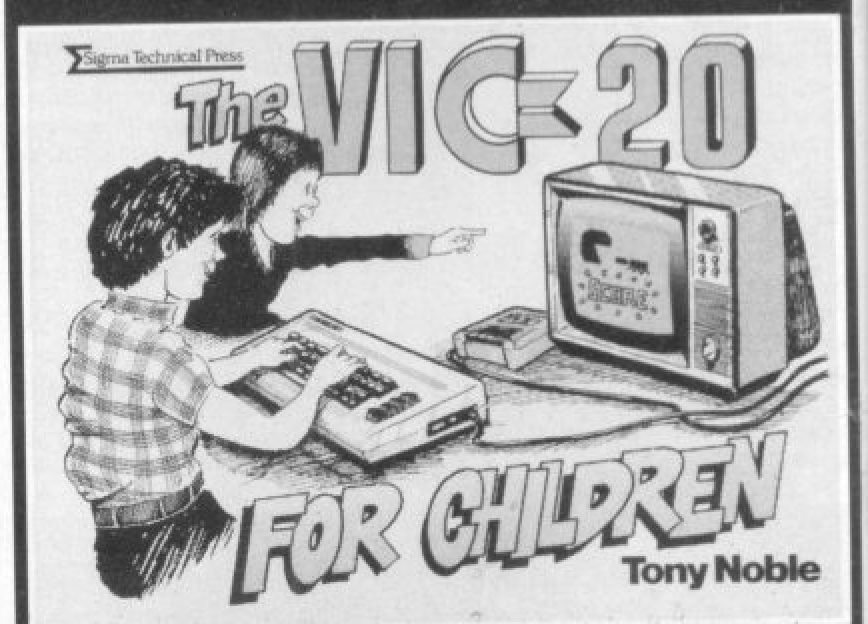
available a set of spirit duplicating masters which reinforce key concepts: hopefully the UK distributor Prentice Hall can also supply these ...

The book itself is well set out, very easy to follow and divided into 15 parts. These range from a look at hardware items to arrays and subroutines. Most lessons have eight essential components – objectives, definitions, examples, exercises, assignments, a summary, one or more practices and a quiz. The book is very much teacher/pupil orientated and although aimed at schools in America, it will still be of use to other readers studying Basic.

Where the book loses points is its lack of tuition with regard to moving graphics and sound. I couldn't help feeling at times that despite the size and thickness of this publication, much of what it was trying to put over has been covered in the user guide just as effectively.

Nevertheless, *I speak Basic to my Vic* may be the book for you to study at home rather that its original concept of teacher/pupil package for use in schools.

The Vic-20 for Children



The Book:	The Vic-20 for Children
The Author:	Tony Noble
The Publisher:	Sigma
The Price:	£5.95
The Reviewer:	Clive Bulmer
The Conclusion:	Excellent

At last – a book written for a specific machine, aimed at a specific type of person, produced by an educationalist. (*And it's both relatively inexpensive and British – Ed.*)

The Vic 20 for Children is exactly as the name implies. Yet despite its title will prove an invaluable companion to *all* new Vic-20 users, children or not! It's written in a clear, easily understood style. I was impressed with the quality of printing and the use of graphics in this publication – others take note!

Tony Noble is to be congratulated on this book, especially for the way he takes the user from the task of switching on to the task of designing and writing programs in twenty nine practical programming steps – a highlight of this book. Many listings are included, all guaranteed to work as they have been printed using a Vic printer. Within these pages a reader will find programs which include mathematics practice, code breaking, simulations, arcade and adventure-type games.

Rush out and buy a copy of this excellent book. At £5.95 it should sell pretty fast!

The Trashman Cometh

Garbage Collection on Commodore Computers

(Part 1)

by Jim Butterfield

There's a sneaky event lying in wait for you within most Commodore machines. It's called *garbage collection*. And it will show up, seemingly unpredictably, in any of several ways.

Your program may seem to run slowly or erratically in spurts. The program may have frequent pauses, each of which lasts several seconds. Worst of all, the program may pause for much longer periods of time – a minute, ten minutes, or even longer – and will seem to have crashed.

You might be tempted to turn the machine off, thinking that it has failed. It hasn't. It's just the garbage collector at work.

The garbage collection phenomenon isn't limited to Commodore machines, of course. Much of what is said here may be applied to other computers. The specific remedies that will be given for Vic, 64, Pet and the other CBMs can be adapted to suit the different logic of other machines.

Conversely, not all Commodore machines have garbage collection problems; for example, machines identifying themselves as running Basic 4.0 won't have these delays.

An example. Try this on your computer:

```
100 DIM A$(800)
110 FOR J=1 to 800
120 A$(J)=CHR$(65)
130 NEXT J
140 PRINT "X"
150 PRINT FRE(0)
160 PRINT "Y"
```

It will take a few moments to perform the loop in lines 110 to 130. You would expect this. But unless you know about garbage collection, you won't expect much of a delay in the last three lines; after all, they are just PRINT statements.

Try it. If there's a delay between printing "X" and "Y", that's a garbage collection pause.

To illustrate the odd nature of garbage collection, change line 120 to read A$(J)="A" – this is the same thing, of course, since CHR$(65) is the letter A. But this time the delay disappears when you run the program.



Why it happens

When a program assigns a value to a string of variables, it may do so in one of two ways.

If the string exists completely within the program, it will be used 'where it lies'. there's no need to make a copy. For example, a program statement such as **500 X$ ="HELLO"** will use the string **HELLO** right out of the program where it lies. Similarly, the statements **800 DATA COFFEE** and **900 READ R$** will cause the string **COFFEE** to be used from within the DATA statement; it won't be moved to any other place in memory.

There doesn't seem to be a name for this kind of string: I'll use the term *static string* to refer to a string used directly from its place within a program.

On the other hand, some strings can't be used this way. If I create a string with an INPUT statement or by using a string manipulation command such as STR$ or CHR$, the computer must find a place to put this newly-formed string. This kind of string must be packed away into a *string storage area*.

I'll use the term *dynamic string* to refer to strings of this type.

Now: suppose that a running program creates a dynamic string with the statement INPUT A$. The user types in the string – say, EBENEEZER – which will be packed into the string storage area. Later, the program loops and asks for more input with INPUT A$, and the user now types in MARY. MARY, too, gets packed into the string storage area; but even though Ebeneezer is no longer needed (he's been replaced by Mary), the old string is not erased. Instead it lies dead in memory . . . as garbage.

Let's talk for a moment about the string storage area. It's located near the top of available Basic memory: above the program, above the variables, and above the arrays. Dynamic strings are placed at the top of this area. As more and more strings are created, they work their way downward. Often, many discarded strings will be left behind – Ebeneezer and his friends. Yet no attempt is made to reclaim the wasted space.

This type of thing continues until the dynamic strings bump into the top of Basic, variables, and arrays. At that time, the waste space must be cleaned up; hence, 'garbage collection'.

Bad timing

Garbage collection can take up a lot of time; more about this in a moment. Worse, it's hard to predict when it will strike. It's difficult to code in a JUST A MOMENT message when you don't know when that moment will arrive.

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You can force a garbage collection by using the FRE(0) function. In order to measure free memory space, the Basic interpreter must repack the strings. But doing this may not buy you much. You'll find that doing a garbage collection saves you no time on the next one. If the illustrative program above is still in your computer, restore the original line 120 and RUN. When the program is complete – pause and all – type GOTO 140. You'll find that the second collection takes just as long as before, even though we know there's no garbage to be collected.

You may estimate garbage collection timing by using this crude rule of thumb:

Garbage collection time = (number of dimensional strings) × (number of dynamic strings)/10

The answer is in milliseconds.

Caution: this is a very crude formula. The actual time varies from machine to machine and is also dependant on average string length. If we work out this formula in terms of the example, we'll get 800 times 800 divided by 10 – giving 64,000 milliseconds or slightly over a minute.

Don't worry if your machine gave you a noticeably different time. It's the principle that counts here; and anything over a few seconds is too long. We must learn how to reduce this time drastically.

Causes of garbage collection

All we need to do is to learn how not to leave waste strings lying around – no waste space means no need for garbage collection. That's easy for me to say, but it will take another article to go into the details of how to do it.

The following rules hint at the details that I'll give in the second part of this mini-series:

Rule 1: Don't move strings around. It's tempting to move strings when your program is doing a sorting job. Don't do it: instead of moving strings, move an 'index' array.

Rule 2: If you transfer strings into and out of computer memory in 'blocks', set the unused strings to null – for example, AS(X)="". When your strings are at a minimum, just before reading in the next block, force a quick collection with FRE(0).

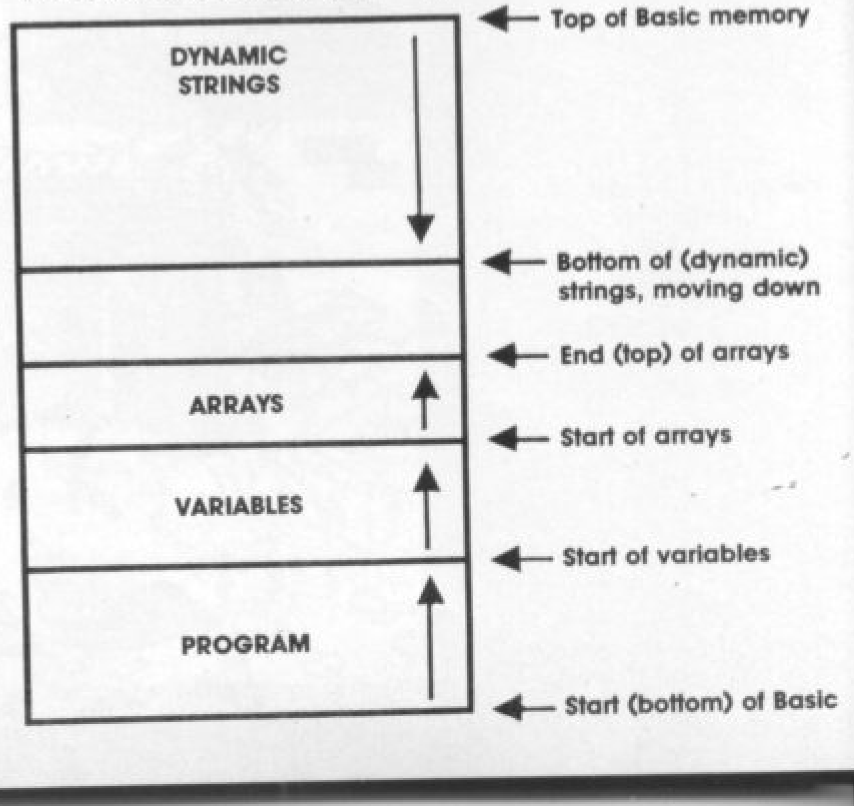
Rule 3: Identify the garbage-making areas of your program. The most common is a GET or GET‡ loop which builds longer strings through concatenation. By fiddling with pointers immediately before and after such operations, you can perform a 'local' garbage cleanup with great savings of time.

Rule 4: Some arrays may be changed to numeric instead of string. For example, "April 6, 1984" may be stored as numeric 06041984. Reducing strings reduces garbage-collection time.

Rule 5: If all else fails: when garbage collection seems imminent, write all strings to disk and clear them from memory; force a quick collection; read all the strings back in.

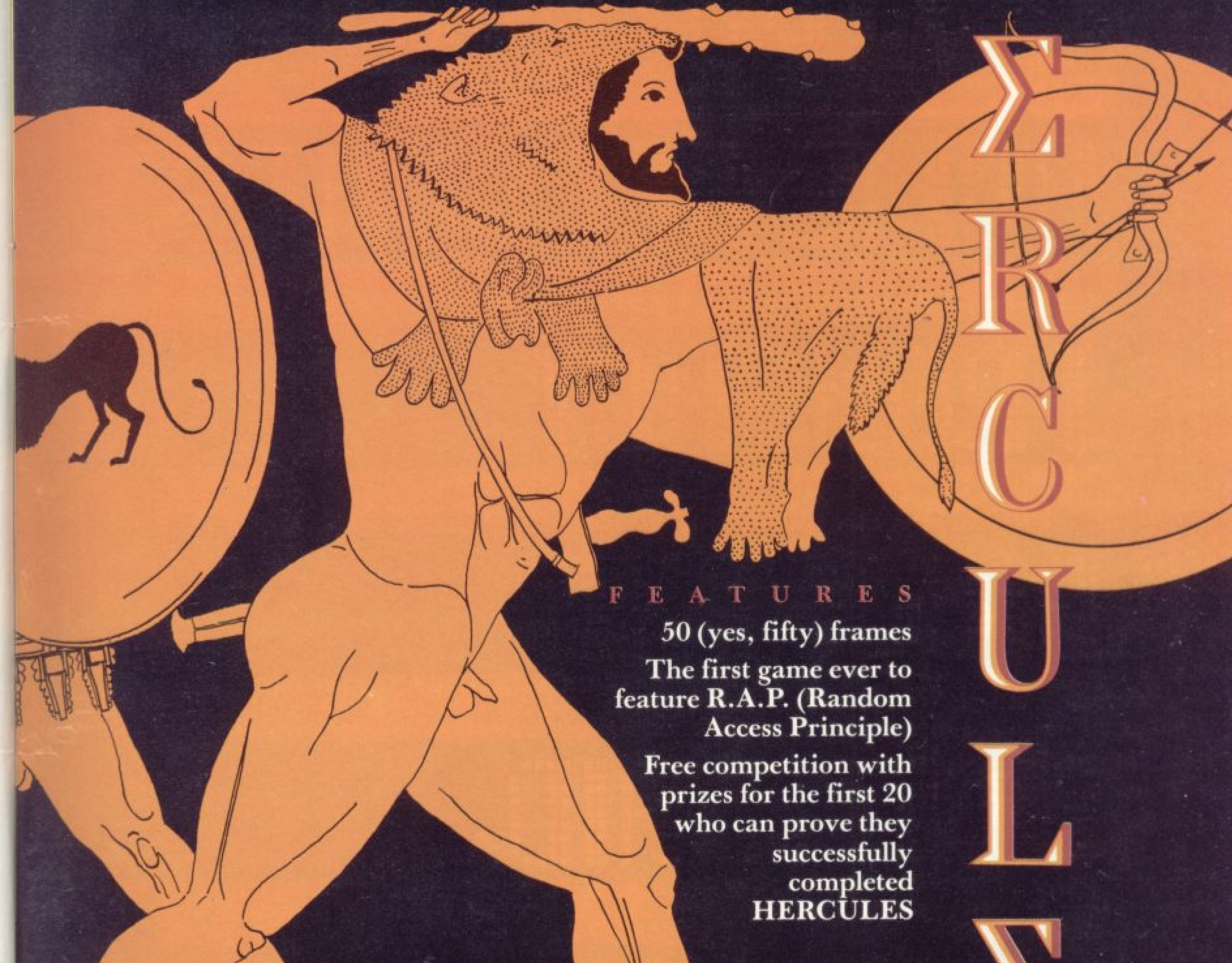
Details on all this next time.

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The Commodore User Profile

Profile: Simon Tranmer

The Commodore User Profile

by Simon Potter

Many a computer hobbyist must dream of turning an engrossing pastime into a full-time occupation, and Simon Tranmer is living proof that such dreams do come true. Only three years ago, Simon was a strictly amateur programmer, playing around at home with a 32K Pet. Today he still does his computing at home, but with a difference. His workroom is crammed with computers and peripherals (which, he says, are normally "switched on at 8am and switched off at midnight").

He also has a lot of money and a grandiloquent title: Chief Software Designer, Consumer Products. He works for the Surrey software house Precision Software, and he's probably best known to Commodore users as the author of the Superscript word processing package. He has since gone on to write or co-author the Superspell spelling checker, the Superbase database management package, and the brand new Superoffice which claims to combine all three in an integrated system. So how did he get to be a Big Deal?

Simon Tranmer's career began somewhat improbably at a Drama school in East London and a job subsequently as stage electrician at the Queen's Theatre, Hornchurch. Like many others before him, he soon found his enthusiasm for the theatre dimmed by the lack of money and jobs: he decided to look for something which at least paid the rent. So he spent the next four years installing and testing telephone exchanges as an engineer for Plessey. Luck seems to have played its part in Simon's career – albeit at times in a somewhat double-edged manner. In this case it came in the form of an offer of voluntary redundancy. Already interested in computers, he accepted the offer and spent some of the concomittant readies on a computer technology course.

The course was very much hardware-orientated, using a venerable CDC 168 (a transistor-based machine of the early '60s) as a training device. Simon reckons, however, that it provided an ideal grounding in computers. "It's very interesting working on a machine like that because you can actually see the discrete components, you can actually see how the machine works at the transistor level. The people that go to such courses now are probably training on the kind of hardware where if something goes wrong you just take it out and put another one in. You don't get down to the nitty-gritty."

Statements of faith

It was also on this course that Simon got his first taste of programming – and was hooked. The official programming content of the course was simply designed to enable engineers to understand the computer's logic. But he found himself spending more and more times before and after lectures, programming the 168 in octal machine code. Yuk.

Some of his early efforts were hardly triumphant, and he recalls ruefully one particular program which must lay claim to be the slowest ever written. The 168 had no multiplication instruction at the machine code level, so Simon set out to write a routine to do it. It worked all right, but with one small snag – he calculates it would have taken 133 years to multiply two 13-digit numbers.

Still, he wasn't a programmer. His brand-new certificate got him a job with IBM as a hardware engineer: and as luck would have it (again) he joined at a time when the 3030 series was being introduced and the 360 series was fading from the scene. Working on these two ranges as well as the still-current 370 series mainframes gave him wide experience of an awful lot of hardware.

He was still doing virtually no programming, but as he points out: "coming at it from the hardware front you do get a very good idea of what the machine can do, what it's capable of. You also get an awful lot of feedback on what sort of applications people are using computers for – really a sort of overview of the whole industry."

During his eighteen months with IBM, Simon passed another milestone in his career – the one that was shortly to lead him into home computers. He discovered *Adventure*. This was 1977, a time when *Adventure* was spreading like fungus to virtually every mainframe in the country. A real mainframe hacker's delight to replace those clandestine copies of *Star Trek* and programs that printed iffy pictures of snoopy or young ladies with unlikely mammary endowments.

Simon rapidly became addicted to *Adventure*: but playing time was limited, especially as many machines had password controls which prevented the game being played during working hours. The only way to get *unlimited* playing time, he decided, was to buy his own computer.

And about this time the first home computers were starting to filter on to the UK market. "Eventually I bought my first Pet," he recalls. "It was an 8K 2000 Series, with the small keyboard and a cassette player built into the front. I taught myself Basic in about a week, and started writing programs."

Adventures in the Pet trade

Simon never did get *Adventure* up on the Pet. But he did write a number of successful programs, including a football pools prediction program which earned him a slightly unjustified reputation.

"I'd been entering the results all winter, and by the end of the season I just had enough data for it to be valid. Then the Australian pools started and I didn't bothering entering the data for them; but I still did the pools – and after a few weeks I won two grand. Everyone thought it was marvellous and said 'Oh, I'll have to get one of those'. I didn't bother telling anyone it was just a fluke." Lucky, you see.

That first Pet kept him happy for a while, but he soon felt that all-too-familiar hankering for more power: "After about six months I decided it was pretty hopeless trying to do anything really powerful in Basic, and that I needed to write in machine code. And I'd need disk to do it. The trouble was, I couldn't afford it."

Simon didn't contemplate writing in assembler because at that time there *was* no assembler available on the Pet. Still, even without disk drives he managed some pretty impressive work at this period – including a very successful version of *Space Invaders*, hand-coded directly into the machine without even a machine-code monitor to help him. Luckily (again) he was now working for National Semiconductor in a job which left him with time on his hands. He was able to take the Pet to work



and program it there, as well as doing a regular two or three hours a night at home.

Eventually, despite losing his job thanks to another company 're-organisation', he got together the money to buy the longed-for new machine: a 32K system with disks and a printer. Best of all, a Pet version of *Adventure* was by now available through the Pet user group – "I played *Adventure* virtually non-stop for a month when I first got it," he recalls happily.

Fame beckons

More serious work was just around the corner, though, for it was around now that Simon started work on what would eventually become Superscript. At the time he had not the slightest idea of what he was getting into: "It started off from a little program I wrote which was totally unconnected with word processing. I'd joined the Pet User Club right from the start and was getting its newsletter. I found this little assembler program in the magazine – it was just displaying memory on the screen. So I played around with it and modified it, and it developed into a thing where I could store and retrieve text. It all evolved from that program."

Great oaks from little acorns grow – in this case with some help from the user group (which is now ICPUG). Simon had started going to the monthly meetings of his local branch at Biggin Hill, taking along his embryo program in the hope of getting advice from more experienced members. Instead he met with an enthusiastic reception for what was clearly the bare bones of a good word processor.

Simon had never used a word processor, though he had seen them in action in the course of his engineering work. And while a number of the eventual features were based on his own ideas, he relied to a large extent on suggestions and feedback from members of the group.

As the months went by, the program developed ... until it finally emerged as Superscript. "It didn't take up a lot of memory," Simon recalls. "The code was very compact, so there was a lot of text area, it had a lot of features that the competition (the commercial packages) didn't have – and it was very fast."

Even now it didn't occur to Simon that he had a best-seller on his hands – in fact, his first idea was to give the program away free to user group members. The cost of producing a manual and supplying the disks made this impossible, though, and the branch members eventually decided to sell it for £30. Which compared pretty remarkably with commercial packages selling for up to ten times as much.

... fortune follows

The truth finally dawned at the 1981 Pet Show. Not only was Superscript selling faster than copies could be made, it was attracting considerable interest from professional software firms — several of whom made offers for the rights to the program. Clearly Superscript was due to take off, and as such it was in need of more care and attention than an amateur group could hope to provide.

Once again, luck was on Simon's side. His brother John just happened to be founder and managing director of a company called Precision Software; at that stage Precision was specialising exclusively in Unix-based applications software. Precision Software took over the marketing of Superscript — and sorted out the copyright problems, which turned out to be considerable. Precision also acquired a promising young software designer, one S. Tranmer...

In the last two years Superscript has been developed and enhanced for the Commodore 64 and 700 Series; Superspell and Superbase have been added to the range; and other products, as they say, are in the pipeline.

Precision obviously did a good selling job on Easyscript — not only is it one of the market leaders in Commodore word processing, it's also the Official Own-Brand Commodore product now.

Meanwhile Simon Tranmer is still beavering away in his front room. Simon claims that the reason he still works at home is that "If I get up at eight o'clock I can get an hour and a half more work done than if I had to go to an office."

The truth, as he himself admits, when pressed, is that it's very difficult to get him away from his machines. He doesn't take lunch breaks or tea breaks, and while he "tries to take some time off between six o'clock and midnight" he quite often works straight through. Hobbies? Of course: whenever he gets the chance, he likes to play computer games with his wife into the small hours.

It could be the story of any amateur programmer, really. Anyone, that is, with the talent to write original and marketable programs, and the dedication to work at it twelve to fourteen hours a day. Of course, it does help to have a brother in the right place at the right time — but who wants it that easy?

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Our regular round-up of games reviews

We get to see a lot of games here at Commodore User, so many in fact that we can't handle all the reviewing ourselves – we farm out some of them, which is why our reviews have someone's initials at the end of them. We look at everything we get, but we don't necessarily print all the reviews we write: instead, we tend to stick with (a) all the best games we come across and (b) those games that you're most likely to find in the shops or the mail order ads.

SCREEN SCENE

ALPHA BLASTER
Vic-20 (any)
Joystick or keyboard
Price £7.95

Typical hectic space action within a vertically expanded screen – which makes a change from the usual format. Your ship is placed in an exposed position (the bottom row of the screen) with alien battle fleets massed above.

The first wave, green fighters, traverse the screen raining bombs: the second, white kamikazis out to avenge their buddies just eliminated, home in for the kill vertically, zig-zagging en route. With your remaining lives you get to negotiate a cyan meteor storm, picking up points for accurate pot shots. A brief respite allowing a rest for your overworked trigger finger while the mother ship tops up your fuel: then on to the next wave and repeat the sequence. However fresh marques have arrived from deepest space to maintain interest and increase the difficulty. How many different waves? Three ... then the pattern is repeated, only faster.

Good, fast action; competent, though not outstanding graphics and sonics. There is no doubt that it is more gripping tussling with various distinctive waves rather than the same old stereotyped forms. *LS*

Sumlock

Presentation:	■■■■□
Skill level:	■■■□□
Interest:	■■■□□
Value for money:	■■■□□

BARREL JUMPER
8K expanded Vic 20
Joystick only
Price £8.95

Another version of the popular arcade game *Krazy Kong*. To start you have a man at the bottom right hand corner of the screen who you control with the joystick. You have to get him to the top.

To do that you first totter along a girder (picking up small umbrellas as you go); then come the wooden planks which tend to disappear as



you pass over them. Scattered throughout are ladders – and yes, you have to climb up them. Points are gained on your way to the top of the construction via the various objects you manage to clutch hold of.

The major obstacles are barrels which come hurtling down towards you (jump or die!) – hence the name. Oh, you gain points if you manage to avoid the barrels too.

The graphics and sound are quite good and the little man is quite clearly defined (better than some I've seen). The program does have a few problems on the loading side, though; I had to ring the suppliers – they were very helpful with their suggestions. Another drawback of presumably greater prevalence: the slightest backward movement of the joystick causes your man to fall off the girder. Very frustrating: this always happened to me as I got close to the top of the construction.

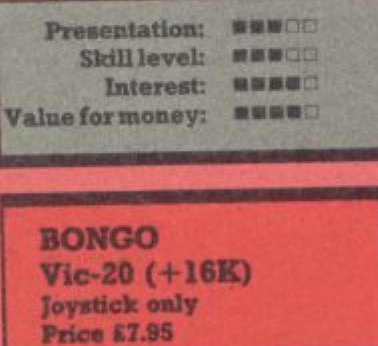
Apart from these few minor hiccups I thought *Barrel Jumper* a good game, a very reasonable example of the genre. *BJ*

Computer Software Associates

Presentation:	■■■□□
Skill level:	■■■□□
Interest:	■■■■□
Value for money:	■■■■□

BONGO
Vic-20 (+16K)
Joystick only
Price £7.95

Yet more ammunition for your 16K! Basically this is a maze chase-and-seek game: but for the jaded palate there are slides, trampolines and transporters that provide opportunities for a bit more fun.



You, a mouse, must retrieve five diamonds from the course and avoid capture by one or two rats according to the level. Bonus letters float across the screen; these can by picked up during the slapstick chase. You can be pushed into the river nine times before the familiar 'GAME OVER' appears, so you should at least make screen two with minimal practice.

To evaluate: *Bongo* is an uprated ladder/maze game with run-of-the-mill sonics, decent use of colour, good animation of bold graphics; there's a two-player option and a fully expanded screen. The fun depends on the skill you are able to develop and the application you bring to the game. A worthy addition to the genre ... and yes, it is addictive *LS*

Anirog

Presentation:	■■■■□
Skill level:	■■■□□
Interest:	■■■■□
Value for money:	■■■■□

CATACLYSM
Vic-20 (unexpanded)
Joystick only
Price £5.95

A fairly basic *City Defence* game with no twists to enliven standard fare. Your gunsight ranges across the night sky over a brightly coloured city, blotting out yellow, cyan and purple saucers with every stab of the fire button. Bombs are falling like rain on a Bank Holiday from the spinning space ships that you weren't quite quick enough to intercept and are now steadily flattening the city. As a mild diversion there are a few alien vehicles scuttling about the streets of the metropolis, so if you have time you may as well bag those too. Let's face it, the end is inevitable and even very accurate gunnery won't alter the course of the story: bonus points are the only reward. So once you have listened to the bugler play the Last Post a couple of times it's a headlong slide into boredom.

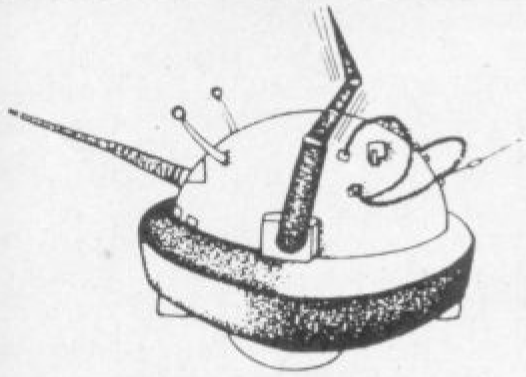
You are presented with an expanded screen (that's fine!) and sonics that Vic owners of any standing will have heard many a time and oft. Level 9 does produc

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a pleasant display with saucers whizzing everywhere, but the game is a pale shadow of Audiogenic's own *Outworld*. *LS*

Audiogenic

Presentation:	■■■□□
Skill level:	■■■□□
Interest:	■■□□□
Value for money:	■■■□□

CARRIER ATTACK
Vic-20 (unexpanded)
Joystick only
Price £5.95

Sustain 50 hits and the wake from your ship disappears ... the crippled carrier soaks up a few more bombs then submerges beneath the waves. Before that situation is reached the odds are that you have fended off wave after wave of bombers and their fighter escort. The shells from your two guns can be guided in mid air, which comes in handy for intercepting bombs apart from downing planes.

The screen read-outs relate the wave number and the points so far (each shot fired gives a minus score). Effective bomb blasts and general graphical representations allied to good use of colour and special effects; but no cause to rave over the sound, even though there is a snatch of Beethoven.

Genuine skill is needed, along with economy of ammunition, to attain a high score. Suitable for hyperactive blasters with a keen sense of timing. *LS*

Rabbit

Presentation:	■■■□□
Skill level:	■■■□□
Interest:	■■■□□
Value for money:	■■■■□

CHICKEN CHALLENGE
Vic-20 (any)
Joystick or keyboard
Price £5.95

A poor mans *Frogger*, but using chickens: you have to see your five chickens home to their roost.



micro-antics
exceptional software

The format is basicaly the same as *Frogger*'s with moving cars, ducks and chicken pies(!!) to avoid.

As with all such games you have a time limit. You get six chickens, so you still have a chance to get the five home; but the task is made more difficult by the diving ducks – and the fox which suddenly appears in your nest. And as you go on to harder screens new animals appear, such as the chasing foxes which appear as you pass the cars.

The keyboard and joystick option this time is very good: you move quicker using the keyboard than the joystick, but some people would be happier with the stick.

The graphics and sound are ok, with none-too-well defined chickens resembling squatting space invaders. The sound is fair, but there is a constant irritating tune which can't be turned off. On the whole not a bad little game: but nothing to get excited about. *BJ*

Micro Antics

Presentation:	■□□□□
Skill level:	■□□□□
Interest:	■■■□□
Value for money:	■■□□□

CENTROPODS
Vic-20 (any)
Joystick or keyboard
Price £5.99

A frenetic version of *Centipede* (again) with an expanded black screen featuring all the usual characters plus a malicious munchman.

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SIGNED: **DATED:**

He's a buddie of the purple leaping spider but employs different tactics, namely streaking straight across the screen on the row you're occupying.

One flaw in the colour scheme is the choice of blue for your gun: it can appear indistinct. But at least the centre of attraction is depicted well enough. With 'digging up the road' sonics the whole experience could prove annoying to the more sober amongst us – but not to confirmed insect stompers. You won't find many better versions for the basic Vic. I liked it: bring on the next! *LS*

Rabbit

Presentation:	■■■■□
Skill level:	■■■□□
Interest:	■■■□□
Value for money:	■■■■□

CONQUEROR
16K expanded Vic 20
Keyboard only
Price £15.95

Conqueror is an adventurish game with an old theme. You are the king of a country in Europe: to hang on to your kingdom you have to feed your people and make sure they have enough money to survive. The game can have up to 15 players – each with their own kingdom.

To do this you have to invade your neighbours; there are soldiers and a supply of iron for swords to help out. The main object of the game is to conqueror all the other countries by fair means or foul.

The game has three seasons per year in which you can make ploughshares (tools to sow crops, beaten from the swords) or war; you can also tax your people to give you more money as well as wheat – but if your people leave or die you lose. Clausewitz was never like this ...

The indestruction booklet is quite comprehensive but you do need to keep referring to it if you really want fully to understand the game. Still, even though there are no graphics it's an excellent game – not least because it brings out the killer instincts in me. The power-mad might also find the game enjoyable *BJ*

Computer Software Associates

Presentation:	■■■□□
Skill level:	■■■□□
Interest:	■■■■□
Value for money:	■■■■□



DAM BUSTA
Vic-20 (unexpanded)
Joystick only
Price £5.95

This could have been just another game rigidly enacting a shallow plot, but real effort has been put in here. For starters there are two screens for the convincing-looking frogman to operate in and accomplish his dam busting. In order to place his bombs he first has to harpoon and wriggle his way through a shoal of variously coloured barracuda. Which brings him to screen two, where he slugs it out with a phalanx of pugnacious piscene guardians — at the same time avoiding depth charges dropped willy-nilly by a chopper. Assuming he had the foresight to surface and replenish his air supply, he could well place a bomb against the dam and dash back to screen one just in time for the explosion. He will need three in a row in order to pull out the plug.

No easy task, but at least the graphics are of sufficient quality not to pall during a long session. A neat, interesting game with a lot happening in 3.5K. *LS*

Rabbit

Presentation:	■■■■□
Skill level:	■■■□□
Interest:	■■■■□
Value for money:	■■■■■

DESTROYER
Vic-20 (unexpanded)
Joystick or keyboard
Price £7.95

A fair amount of action for the basic Vic, with attacks coming from submarines and bombers. A radar scanner gives you an early warning as to the direction of the raiding aircraft, but you'll be alerted even earlier thanks to the sound effects. Two guns and depth-charge pads are your means of retaliation: along with direction controls, this means six keys need pressing almost continuously.

Even though the game is good fun, I do feel that more colour could have been added and the explosions improved. The verdict: not an essential part of a collection, but perfectly acceptable nevertheless. *LS*

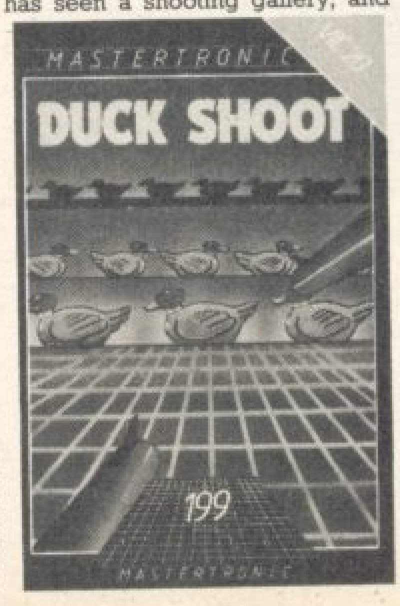
Sumlock

Presentation:	■■□□□
Skill level:	■■■□□
Interest:	■■■□□
Value for money:	■■□□□



DUCK SHOOT
Vic-20 (unexpanded)
Joystick or keyboard
Price £1.95

You certainly get your money's worth here: it's value all the way, from the fairground music to the fully expanded screen. Everyone has seen a shooting gallery, and



here you get three rows of moving targets; purple owls, white rabbits and yellow ducks. All need one bullet to be knocked down, but if a duck makes it to the next row it gains a life and changes colour — first to green and subsequently to cyan. If any duck passes through all three rows it will gobble up some of your bullets. But don't despair; there are '5' and '10' targets to hit for extra ammo.

Eight speed levels, high score retained and a logical scoring points system (higher points for targets further away) plus extras for bullets and time remaining at the end of each screen. In no way is this cheap and nasty: just cheap. *LS*

Mastertronic

Presentation:	■■■■□
Skill level:	■■■□□
Interest:	■■■□□
Value for money:	■■■■■

GUN FIGHT
Vic-20 (unexpanded)
Joystick or keyboard
Price £6.95

Let me say straightaway that you may be disappointed with the representation of the gunslingers. That apart, though, the graphics are fair enough – purple rocks, green trees and yellow cacti.



Essentially this program is intended as a two player duel, though the computer will act as a stand-in. Start by selecting the duration of combat, up to nine minutes, then jockey for position and pump in some killer shots. Seek cover behind a cactus at your peril, for they can be shot away, and beware of bullets ricocheting off rocks. It goes without saying that respective tallies are displayed continuously.

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Games

Screen Scene

With a different layout for each contest, and decent sound effects, this tape should find itself on plenty of shortlists. *LS*

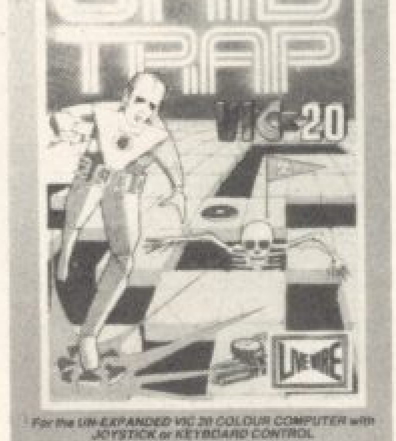
Sumlock

Presentation:	■■■□□
Skill level:	■■■□□
Interest:	■■■□□
Value for money:	■■■□□

GRID TRAP
Vic-20 (any)
Joystick or keyboard
Price £7.95

In this fast-moving all-action arcade game your job is to defuse bombs which appear somewhere on the grid of traps – hence name *Grid Trap*.

You can control your man by keyboard or joystick; as you move the traps disappear, and you get 10 points for each trap you walk on, which gives good high scores. Each bomb has a 60-second fuse and if you don't reach it in time you loose a life.



But the game is not as simple as that: there are mines scattered all over the grid which explode if you step on them, and also there's the boot which stomps around the grid – if it happens to kick you you lose a life ... For extra points you can collect flags which lay about the grid. Once you have defused five bombs you go on to the next screen which has one more boot.

The graphics and the sound are good, with well-defined 3D-box traps and skull and crossbones representing the mines. The sound is good, too, with a little tune being played as you go about your dangerous job.

An enjoyable game that anyone can play; not a patch on *Gridrunner*, though. *BJ*

Livewire

Presentation:	■■■□□
Skill level:	■■■■□
Interest:	■■■□□
Value for money:	■■□□□

PUZZLE PACK
Vic-20 (any)
Keyboard only
Price £6.95

Six tests of skill and perspicacity, entertaining enough for a rainy af-



ternoon – could also come in handy for those who wish to put something 'sensible' on the screen once in a while.

You are presented with ORBITS (slot a falling shape into a matching landing zone); KNIGHT'S MOVE (land on every square on a chess board); GRAPHIC TWISTER (contort three shapes to match an original; RAINBOWS (complete a mathematical sequence); -SLIDE PUZZLE (like the puzzle given away in hamburger joints); DIGITS (a number-eater teaser).

The graphics are low-res, straight from the standard character set in ROM; and similar programs could be easily typed in from various listings. But if you

want them here and now, get your money ready. *LS*

Sumlock

Presentation:	■■□□□
Skill level:	■■■□□
Interest:	■■■□□
Value for money:	■■□□□

MINE MADNESS
Vic-20 (unexpanded)
Cartridge
Joystick or keyboard
Price £9.95

If you are into collecting boring, frustrating games, you're in luck — here comes another one. Ignore the insert, that only makes it look interesting. Basically there are some old abandoned mine shafts containing bags of gold (very difficult to see), treasure chests and the obligatory lost explorer (female, of course). By using the Wacky Waiter style lifts you can journey through the labyrinths and recover the goods thus gaining points to graduate to the next level of play.

As the combined weights of yourself plus a treasure chest is too much for the lifts, you are compelled to use a different route to your cargo — often collecting, pushing and shoving from shaft to shaft many times before the coveted points are in the bag. Just right for the odd dull half hour eh? The monotonous, insistent sonics might drive you round the bend; and don't look to the purple monsters for diversion, for they are virtually shapeless — no inspiration there. Fearing that the falling rocks on level four might make for compulsive play, I switched off. Surely a waste of a cartridge. *LS*

Creative Sparks

Presentation:	■■□□□
Skill level:	■■■□□
Interest:	■□□□□
Value for money:	■■□□□

MUTANT HERD
Vic-20 (unexpanded)
cartridge
Joystick or keyboard
Price £9.95

A while ago I was casting covetous gazes at this cartridge priced at £20: at half that price it's a must.

Multitudinous monstrosities are pouring out from their burrows and heading pell-mell towards a throbbing generator. They want to munch into the walls costing you a life if all the walls are consumed. Blast 'em? Oh, you don't have a laser. Instead you will have to become adept at manipulating horizontal and vertical bars in order to shove them off the screen. Use your cunning to guide one of your purple mutant-hunters down one of their tunnels and flip immediately to screen two. Strangely he's turned blue, but no matter: steer him down the ladder, dodging into side chambers to avoid falling rocks, and place a bomb near the queen mutant: zip back to the surface and detonate. You're back to screen one but with only three burrows to worry about instead of four. Unfortunately the bars have developed gaps so the task doesn't get any easier. To move up a level naturally all the tunnels need eliminating.

Considering the mutants have to be small, the graphics are good while the sonics should motivate you. Different. I like it! *LS*

Creative Sparks

Presentation:	■■■■■
Skill level:	■■■□□
Interest:	■■■■□
Value for money:	■■■■□

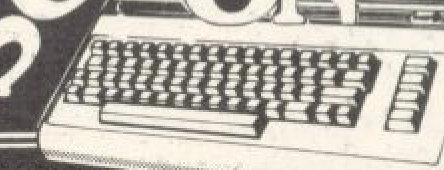


SUBMARINE COMMANDER
Vic-20 (+16K)
Joystick or keyboard
Price £5.95

This was originally in cartridge form but is now available on tape at a bargain (real bargain!) price. Although the artist's impression is a trifle optimistic, the program does make good use of the Vic's all-round capabilities in sound and vision.

Take your time to learn the ropes: then stalk the enemy con-

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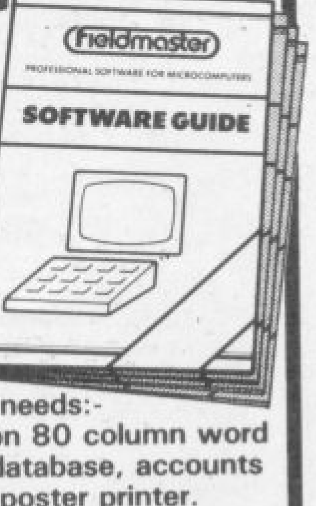
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voys using your map of the Mediterranean and the compass. There are various instruments and guages to monitor, manoeuvers to master. Use the sonar mode when closing in – then up with the periscope in true Hollywood fashion. A scrolling screen gives the impression of scouring the skyline and displays your torpedoes zooming to the target (or missing). Sink a few, crash dive, check for damage; replenish your air supply at the surface when the retaliatory bombardment has finished; and begin anew.

Real solid action with plenty to bite on – more than just another shooting game. The only fault worth mentioning is that the shipping should be depicted in a different colour to the land masses while in map mode. Good stuff though.

LS

Creative Sparks

Presentation:	■■■■□
Skill level:	■■■■□
Interest:	■■■■□
Value for money:	■■■■■

MULTITRON
Vic-20 (unexpanded)
Joystick or keyboard
Price £7.95

We are stuck on the base line again, with six different waves of unfriendly freaks to see off. Our tripple-streamed laser gushes out continuously, if desired, mopping up all comers till the energy cells are drained: then it's down to dodging about as they recharge. Anticipation and timing are therefore essential to get through to the bonus screen. This entails a testing journey through a tricky space lane (it looks suspiciously like a road) gaining an extra ship at the end. It hardly needs stating that the tempo hots up as we face the various nasties again.

The laser rays make an exciting graphic display but more imaginative use of colour would have made the aliens more spectacular. The sonics are from the standard recipe book and as such are ok. Verdict? Really should be worth translating for the 64.

LS

Sumlock

Presentation:	■■■□□
Skill level:	■■■□□
Interest:	■■■□□
Value for money:	■■■□□

SLICKER PUZZLE
Unexpanded Vic 20
Joystick or keyboard
Price £6.95

Slicker Puzzle, as the name suggests, is a puzzle game for the Vic. The puzzle is a square made up of coloured triangles which in turn form coloured squares. The complete square is mapped as co-ordinates A-P horizontally and vertically.

Once you've selected your skill level and score-board – there are eight skill levels and four scoreboards (the purpose of which totally escaped me ...) – the computer shuffles two or more lines of the puzzle (depending on skill level) and then proceeds to 'de-shuffle' just to prove it can be done. It then sets its target moves; you respond by going to the section you reckon should be moved to put the puzzle back together again. Each time you move a section your chosen scoreboard displays your number of moves.

Once the puzzle is completed there are choruses of zapping noises to let you know. If you complete it over the target set, you'll get a message flashing that your moves were inferior to the computer's; and if you win, the Vic ungraciously flashes up unreadable gibberish. Fascinating stuff.

BJ

DK Tronics

Presentation:	■■■□□
Skill level:	■■■■□
Interest:	■■■■■
Value for money:	■■■■□

SPACE RESCUE
Vic-20 (unexpanded)
Joystick or keyboard
Price £6.95

Navigate a path through a stream of meteors to one of the three landing pads; rescue two stranded VIPs; return to the mother ship, avoiding or blasting the space rocks once more; then do it all again.

Now on to stage two, just the same but with more debris to contend with. As you develop some skill more interest in the game is generated — but never enough to keep you glued to the TV with no thought for the morrow. The purple meteors, which incidentally flow two ways, could have exhibited varying forms. Come to that, why stick to just one colour? The sonics



are of the type we have all come to take for granted but would miss if absent. *LS*

Sumlock

Presentation:	■■■□□
Skill level:	■■■□□
Interest:	■■■□□
Value for money:	■■■□□

SCORPION
Vic-20
Joystick or keyboard
Price £7.95

If I had a fiver for every version of Centipede I've seen.... There are cacti instead of fungi, and cactus spores replace fleas; but the spider remains — and a bonus lizard is thrown in for good measure. Elimination of a string of red scorpions merely summons up a replacement along with another batch of cacti, both with altered colours.



Each version of Centipede has attractions and minor differences: an almost bewildering selection, in fact, and I can't imagine any shop giving a demo of all they might stock. If you like the scenario this version should not disappoint you. But be warned — sooner or later it's always possible to find another variant that may appeal. *LS*

Sumlock

Presentation:	■■□□□
Skill level:	■■■□□
Interest:	■■□□□
Value for money:	■■□□□



TRIAD
Vic-20 (unexpanded)
Joystick or keyboard
Price £7.95

Far better than the dismal Cosmiads and just acceptable as Galaxians — though the animation is rather jerky. Red, purple and blue fighters and two yellow mother ships peel off from the formation to provide a contest; the tail end survivors are especially difficult to mop up. Action and sonics both pass muster, but I'm afraid the 64 versions of this arcade classic have spoilt me.

Still, until another software house is able to prove otherwise, this would seem to be the one to have on a Vic. Serious space battlers should investigate further. *LS*

Sumlock

Presentation:	■■□□□
Skill level:	■■■□□
Interest:	■■■□□
Value for money:	■■■□□

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Vic-20 with 3K expansion and joystick

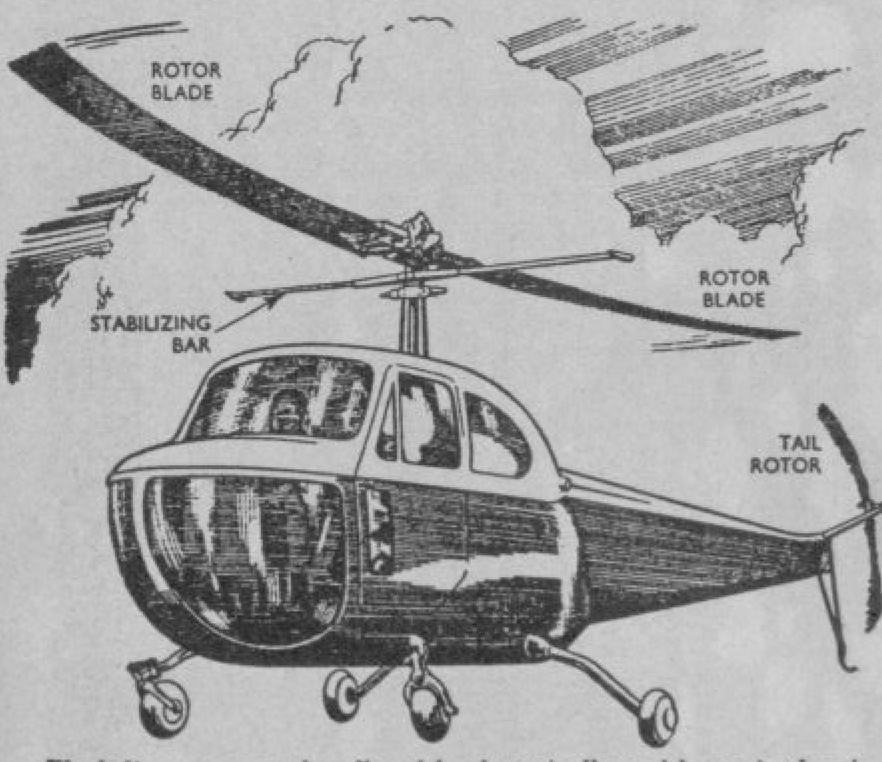
By Kulvinder Bhupal

This program is really two games in one; primarily, your skills at piloting a helicopter are tested. Only when you've succeeded in steering that through a narrow cavern and destroyed as many asteroids as you can, do you get to fly the rocket.

Shooting asteroids gives you more points but decreases your fuel level. That's displayed at the top of the screen with your points total. So you've also got to shoot the occasional fuel dump to replenish stocks.

When you reach the end, your copter lands and a little man rushes out into the nearby rocket which you then steer through another onslaught of asteroids. If you crash somewhere along the way, a screen message displays your points total and the distance travelled – a nice touch.

The cavern builds up at the right side of the screen and scrolls (somewhat jerkily) across to the left. So your helicopter/rocket doesn't really move; you use the joystick merely to manouver vertically and fire, of course.



The helicopter can take off and land vertically and hover in the air

```
*** COPTER RUN ***

0 REM*** *****************(C) COPTER RUN BY     K.S.BHUPAL   22/2/84  **********
************
2 REM*** ***************** TITLES / INSTRUCTIONS***********************
5 POKE 650,255: PRINT "[CLR][CUD][CUD][CUD][PUR]  C[CUR]O[CUR]P[CUR]T[CUR]E[CUR]
R  R U N[RED]"
10 PRINT "[CUD][CUD][CUD]  BY[SPC22][CUD][CUD]KULVINDER BHUPAL"
20 PRINT "[RVS][CUD][CUD][CUD][CUD]  PLEASE HIT A KEY!!!![RVO][BLK]"
25 GETA$: IFA$=""THEN25
28 POKE 36879,25
30 PRINT "[RED][CLR][CUD][CUD]   THE OBJECT OF THIS [CUD]GAME IS TO TRAVEL AS [C
UD]  FAR AS POSSIBLE INTO"
35 PRINT "[CUD]THE CAVERN."
40 PRINT "[CUD]  FIRST YOU WILL BE   [CUD]GIVEN A HELICOPTER TO [CUD]TEST YOUR S
KILL,IF YOU"
50 PRINT "CAN SUCCESSFULLY FLY  [CUD]IT YOU'LL BE GIVEN THE[CUD]CHANCE TO FLY TH
E[SPC5][CUD]ROCKETSHIP."
55 PRINT "[RVS]   HIT  A  KEY[SPC6][RVO]"
58 GETA$: IFA$=""THEN58
60 PRINT "[CLR]WITH THE HELICOPTER   [CUD]YOU WILL HAVE TO TAKE [CUD]OFF FROM TH
E PAD AND"
65 PRINT "[CUD]FLY ACROSS THE LAND   [CUD]AND INTO THE CAVERN , [CUD]AVOIDING TH
E ASTEROIDS"
70 PRINT "[CUD]YOU WILL THEN HAVE TO [CUD]LAND ON THE PAD INSIDE[CUD]THE CAVERN
AND RUN TO "
75 PRINT "THE ROCKETSHIP"
80 PRINT "[RVS]  HIT   A   KEY[SPC6][RVO]"
82 GETA$: IFA$=""THEN82
85 PRINT "[CLR]YOUR FUEL IS ALWAYS   [CUD]DECREASING MORE SO IF [CUD]FIRE.IF YOU
 FIRE AT "
90 PRINT "[CUD]THE FUEL DUMPS YOU[SPC4][CUD]YOU REGAIN 150 UNITS  [CUD]OF FUEL A
ND 20 POINTS"
95 PRINT "[CUD]YOU GET 10 POINTS FOR [CUD]EACH ASTEROID YOU[SPC5][CUD]SHOOT"
100 PRINT "[RVS]HIT A KEY TO PLAY[SPC5][RVO]"
105 GETA$: IFA$=""THEN105
420 PRINT "PLEASE WAIT[PUR]": GOSUB5000
425 REM***  **************  DEFINE  VARIABLES   ***********************
460 QW=1: H=2: SC=0: FE=3000: M=8: P=0: CO=2
480 CC=27: CA=25: CB=24: PRINT "[CLR][PUR]": HC=198
490 L=8086+23: B=8163 : ZX=0: A=5: POKE 36869,255: PRINT "[CLR]": XZ=13: TB=8141
495 REM***  **************  M/C ROUTINE TO        SCROLL SCREEN RIGHT     TO LEFT
 ***********
500 RESTORE: FORT=829TO874: READS: POKE T,S: NEXTT
620 DATA169,19,32,210,255,169,29,32,210,255,169,13,32,210,255,169,0,141,60,3
630 DATA169,29,32,210,255,169,20,32,210,255,169,13,32,210,255,238,60,3,173,60,3
640 DATA201,21,208,231,96
700 REM*** ***************       MAIN  GAME      ***********************
705 Z=-2: POKE L,CA: POKE L-1,CB: POKE L-2,32: POKE L+30720,6: POKE L-1+30720,6
710 POKE 36878,6: POKE 36878,0: POKE 36877,170: FORN=1TO15: POKE 36878,5
712 NEXT: POKE L,CC: POKE L-2,32: POKE 36876,0
715 POKE 37139,0: POKE 37154,127: A1=PEEK(37137): A2=PEEK(37152)
720 IF(A1AND4)=0THENL=L-22: Z=+22: POKE L+21,32:
730 IF(A1AND8)=0THENL=L+22: Z=-22: POKE L-23,32
```

```
755 IF(A1AND32)=0THENGOSUB8000: POKE F,32: FE=FE-50
760 IFZX=>20ANDOW=1THENA=INT(RND(1)*10)+1
765 IFA>5THENTB=TB+22
766 IFA<5THENTB=TB-22
767 IFTB=<(7701+HC)THENTB=7701+HC
770 IFTB=>8163THENTB=8163
775 PRINT "[HOM][SPC20]"
780 PRINT "[HOM]FUEL"; FE; "SC:"SC
785 IFFE=<250THENPOKE 36876,200: PRINT "[HOM]FUEL LOW"
790 IFDI=>100ANDOW=1THENGOSUB7000: TA=TB-HC: GOTO795
791 GOTO798
795 FORC1=7701TOTASTEP+22: POKE C1,37: POKE C1+30720,CO: NEXT: POKE TA-22,37
798 FORC2=TBTO8185STEP+22: POKE C2,37: POKE C2+30720,CO: NEXT
800 IFL=<7680ORL=>8185THENL=L+Z
801 IFPEEK(L+1)=32THEN810
805 IFPEEK(L+1)=28ORPEEK(L+1)=29ORPEEK(L+2)=36ORPEEK(L+1)=37THEN1000
807 IFPEEK(L+1)=35ORPEEK(L+1)=36THEN1000
810 POKE L-1,CB: POKE L+Z,32
850 POKE TA,29: POKE TB,28
900 IF(PEEK(37152)AND128)=0THENOW=1: XZ=90↑19.5: DS=1
906 IFZX=>XZTHENOW=0
910 IFOW=1THENSYS829
920 IFOW<>1THENPOKE L-22,32: POKE L-23,32: POKE L+21,32: POKE L-2,32
925 IFOW<>1THENPOKE L-2,32: POKE L-21,32: POKE 8130,45: POKE 8131,46: POKE 8130+
30720,0: POKE 8131+30720,0
930 FU=INT(RND(1)*10)+1
935 IFFU=5THENPOKE (TB-22),42: POKE (TB-22)+30720,5
940 IFDS=1THENDI=DI+5: FE=FE-10: HI=HI+1
950 IFHI=>40THENHC=HC-22: HI=0: M=M-2: CO=CO+1
952 IFM=<1THENM=2
953 AS=INT(RND(1)*M)+1
955 IFDI=>100ANDAS=1THENR=INT(RND(1)*16)+1: POKE TB-(R*22),35: POKE TB-(R*22)+30
720,0
960 IFFE=<0THENPRINT "[HOM][CUD]YOU RAN OUT OF FUEL": POKE 36878,0: GOTO1120
965 IFHC=<88ANDP=0THENGOSUB9500: ZX=1
970 IFP=1ANDPEEK(L+23)=45ORP=1ANDPEEK(L+23)=46THEN9600
975 IFHC=<88ANDCA=44THENPRINT "[HOM][CUD]YOU HAVE SUCCESSFULLY COMPLETED THE CAV
ERN  COURSE"
978 IFHC=<88ANDCA=44THENFORO=1TO255: POKE 36879,0: POKE 36879,27: NEXT: PRINT "[
CLR][CUR][CUR][CUD][CUD]"; : GOTO1130
990 ZX=ZX+1: GOTO700
995 REM*** ****************** CRASH ROUTINE **************************
1000 POKE 36878,0: FORN=1TO30: NEXT
1005 IFZX=>30THENPOKE L,40: POKE 36878,15: POKE 36877,180
1008 FORN=1TO30: POKE L,30: POKE L,38: POKE L,37: POKE L+30720,N: NEXTN
1020 FORN=15TO0STEP-1: POKE 36878,N: NEXT: POKE 36877,0
1100 PRINT " C R A S H E D": PRINT "HIT  THE SPACE BAR"
1110 GETA$: IFA$=""THEN1110
1115 POKE 36869,240
1120 PRINT "[CLR][CUD][CUD][CUD]  YOU SCORED "; SC; "AND TRAVELLED "; DI; " MILE
S"
1130 PRINT "[CUD][CUD]ANOTHER GO (TYPE Y FOR YES OR N FOR NO)": INPUTQ$
1140 IFQ$="Y"THENRUN460
1150 IFQ$="N"THENPRINT "[CLR]": POKE 36869,240: POKE 36879,27: END
1155 PRINT "[CLR][CUD][CUD]YOU DIDN'T TYPE Y OR N   RETYPE!!": GOTO1130
1200 END : REM*** ********************************  LOADING GRAPHICS   *********
*************
5000 POKE 51,255: POKE 52,27: POKE 55,255: POKE 56,27
5010 FORI=0TO511
5020 POKE 7168+I,PEEK(32768+I): NEXT
5022 READXX
5023 IFXX=<-255THEN5025
5024 GOTO5022
5025 FORAA=24TO(24+22): IFAA=32THENAA=33
5030 FORI=0TO7: READA
5040 POKE 7168+I+(AA*8),A: NEXT: NEXTAA
5050 DATA-255
5100 DATA0,192,112,63,1,0,0,0
5105 DATA255,16,124,242,255,126,16,124
5110 DATA0,192,112,63,1,0,0,0
5115 DATA56,16,124,242,255,126,16,124
5120 DATA129,139,203,217,223,255,255,255
5125 DATA255,255,255,223,217,203,139,129
5130 DATA24,80,56,20,16,168,68,2
5135 DATA24,20,56,80,16,40,40,00
5140 DATA0,160,160,224,224,64,0,0
5145 DATA0,40,56,16,56,16,16,0
5150 DATA56,126,255,254,124,126,60,24
5155 DATA24,60,126,62,127,255,126,28
5160 DATA255,255,255,255,255,255,255,255
5165 DATA20,162,69,237,50,105,196,138
5170 DATA61,27,63,255,56,28,124,0
5175 DATA0,0,0,119,0,0,0,0
5180 DATA30,0,0,0,0,0,0,125
5185 DATA24,126,207,223,78,94,255,231
5190 DATA0,240,120,63,63,127,255,224
5195 DATA0,0,0,240,204,255,252,224
5200 DATA255,196,213,196,221,255,24,255
5210 DATA255,71,91,91,71,255,24,255
5220 DATA138,196,105,50,237,69,162,20
5500 POKE 36869,255: RETURN
7000 RETURN
8000 N=0: REM*** **************  SHOOTING ROUTINE    **********************
8010 FORF=L+2TO(L+10): N=N+1
8040 POKE F,40: POKE 36877,250-(N*5): POKE F+30720,0
8050 IFPEEK(F+1)=35OR PEEK(F+1)=36THENPOKE F+1,38: POKE 36877,130: SC=SC+10: POK
E F+1,32: RETURN
8055 IFPEEK(F+1)=42THENFE=FE+150: POKE F+1,38: POKE 36877,130: POKE F+1,32: SC=S
C+20: RETURN
8060 IFPEEK(F+1)=28ORPEEK(F+1)=29ORPEEK(F+1)=37THEN9010
8065 POKE F,32: NEXT
9000 POKE F,32: RETURN
9010 POKE F+30720+1,7: FORC=1TO10: NEXT: POKE F+30720+1,6: RETURN
9500 POKE TB-23,45: POKE TB-22,46 : P=1: RETURN
9595 REM***  ************* SECOND STAGE ROUTINE **********************
9600 PRINT "[HOM][CUR][CUR][CUD][CUD][CUD][CUD][CUD] THE SECOND STAGE": FORO=L+2
2TOL+22+9: POKE O,29: POKE O-22,32
9602 POKE O-44,32: POKE O-66,32 : NEXT
9603 POKE L+6,45: POKE L+7,46: POKE L+6-22,43: POKE L+7-22,44
9610 IF(PEEK(37152)AND128)=0THENL=L+1: POKE L,30: POKE L-1,32
9620 IFPEEK(L+1)=45ORPEEK(L+1)=46THENHC=397: P=0:   CC=44: CA=44: CB=43: GOTO490
9650 IFPEEK(L+2)=28THENFORO=1TO80: NEXT: POKE L,31: POKE L+30720,3
9900 POKE L+30720,0: POKE L,31: GOTO9610
```

How to type in Victuals

How we reproduce listings

We usually put our listings for Victuals and other programs through a code conversion program that replaces the hieroglyphic Commodore colour and screen control symbols with a more meaningful set of commands.

When you see...	It means ...	And you ...
[CUP]	*cursor up*	press the 'cursor up' key (shifted)
[CUD]	*cursor down*	press the 'cursor down' key
[CUL]	*cursor left*	press the 'cursor left' key (shifted)
[CUR]	*cursor right*	press the 'cursor right' key
[HOM]	*cursor to the top lefthand corner*	press the HOME key
[CLR]	*clear*	press the CLR key (shifted)
[INS]	*insert*	press the INSert key (shifted)
[BLK]	*change to black*	press the BLK key (CTRL and 1)
[WHT]	*change to white*	press the WHT key (CTRL and 2)
[RED]	*change to red*	press the RED key (CTRL and 3)
[CYN]	*change to cyan*	press the CYN key (CTRL and 4)
[PUR]	*change to purple*	press the PUR key (CTRL and 5)
[GRN]	*change to green*	press the GRN key (CTRL and 6)
[BLU]	*change to blue*	press the BLU key (CTRL and 7)
[YEL]	*change to yellow*	press the YEL key (CTRL and 8)
[RVS]	*reverse on*	press the RVS ON key (CTRL and 9)
[RVO]	*reverse off*	press the RVS OFF key (CTRL and 0)
[SPC]	*space*	press the space bar; repeat the specified number of times

We have two methods of presenting listings. When we can, we run them through a converter program that replaces the hieroglyphic control codes with more meaningful symbols.

These listings we generally run out on a letter-quality printer, though, and conventional graphics can't be handled on a daisywheel. So some listings are done on a Commodore printer, in which case you may see the standard control codes:

```
CLR           ...   (REVERSED HEART)
HOME          ...   (REVERSED S)
RVS ON        ...   (REVERSED R)
RVS OFF       ...   (REVERSED UNDERSCORE)
CURSOR UP     ...   (REVERSED SHIFTED •)
CURSOR DOWN   ...   (REVERSED Q)
CURSOR LEFT   ...   (REVERSED UPWARD BAR - SHIFTED H)
CURSOR RIGHT  ...   (REVERSED LEFT SQUARE BRACKET)

SET COLOUR TO
        BLACK  ...   (REVERSED SHIFTED P)
        WHITE  ...   (REVERSED E)
        RED    ...   (REVERSED £)
        CYAN   ...   (REVERSED COMMODORE-SHIFTED *)
        PURPLE ...   (REVERSED COMMODORE-SHIFTED -)
        GREEN  ...   (REVERSED UP ARROW)
        BLUE   ...   (REVERSED LEFT ARROW)
        YELLOW ...   (REVERSED PI SIGN)
THE FUNCTION KEYS CAN BE INCORPORATED INTO PRINT STATEMENTS TOO.
AS WITH THE OTHER NON-ALPHANUMERIC KEYS, THEY APPEAR AS SPECIAL"

SYMBOLS IN A LISTING
F1  ...                 F2  ...
F3  ...                 F4  ...
F5  ...                 F6  ...
F7  ...                 F8  ...
```

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Two more spreadsheets:

Calculation from Scandinavia

by Ken Ryder

Continuing our on-going series of reviews on software that adds big-computer capabilities to the modestly-priced 64, we come to two spreadsheets from Sweden.

Handic previously distributed its two spreadsheet packages through Kobra Micromarketing, but now the company has opened its own UK office and is doing its own marketing.

CalcResult is disk-based (with a security dongle), is a so-called "3D" sheet linking together up to 32 pages of sheets, each of them with 16,002 cells (63 columns across x 254 rows down), making over half a million cells, price £99.

Easy CalcResult is cartridge based, providing a single sheet of 16,002 cells, and is less than half the price at £45.

Easy CalcResult

Easy CalcResult is a relatively limited but still pretty powerful cartridge that can do most of its Big Brother's calculation – its files can also be used by full CalcResult.

Each of the 63 columns in the Easy Calc sheet is identified by characters in the range A-BK, and each row in the range 1-254. Thus the co-ordinate D64 identifies a cell in the fourth column and 64th row.

Formulae are written in basic, using variables and constants, where the cell co-ordinate represents a variable name, e.g. E16. If 3.142 is entered in the cell E16, then wherever E16 is entered in a formula throughout the sheet it will be equivalent to 3.142. Not only that, but if a new value is entered into E16, all the values and formulae dependent upon it are automatically recalculated.

Recalculation

Recalculation of the sheet can be column-by-column, or row-by-row. The default is column-by-column, in other words Easy Calc calculates the new value of A1, A2, A3, ... A254, then B1, B2 etc.

So if A3 depends upon C1 and the value of C1 changes after A3 has been calculated, the value of A3 will be wrong. This can be avoided by careful layout of the sheet, or it can be rectified by forcing several recalculations.

The recalculations process can be switched off so that several new values can be entered on to the sheet before recalculating. This is useful as the act of calculation slows down data entry.

Easy Calc uses all the normal mathematical functions except the trigonometrical ones, eg SIN, COS etc. In addition several business-orientated commands can be included in formulae (table 1). The 64's relational operators, i.e. AND, OR, = etc., can be used within the IF THEN ELSE function, particularly useful where a value to be calculated varies with the number of items, e.g. discounts or prices.

The display

By default, only four columns and 21 rows of spreadsheet are displayed on the screen, which can be scrolled vertically and horizontally over the sheet using the usual cursor control keys. There is also a GOTO command which 'jumps' the cursor to any co-ordinate on the sheet.

The column-width defaults to eight variable characters, although it may be changed to any value between 5-18 to bring more or fewer columns on to the screen.

Any labels longer than the maximum column width are truncated on the screen, and large values are displayed as exponents, but retain their true value in calculations. The format of each individual cell may be altered to integer or two decimal places, with left or right justification.

Any column can be used as a title column, fixing its position and width independently from the rest of the sheet (figure 1). If the screen is scrolled horizontally over the sheet the title column remains fixed in the left-hand side, but it scrolls vertically with the sheet.

This feature is useful for fixing the contents of one column in the left hand side of the screen, eg takings for January while the figures for other months are scrolled across for comparison. Unfortunately the top row cannot be fixed to display column headings permanently.

The contents of rows and columns may be replicated (copied) to other areas of the sheet, and the variables used within the formulae may be absolute i.e. equal to the original value, or relative to the new position. A whole matrix of rows and columns can also be copied if desired. Rows or columns may be inserted or deleted as required.

Editing the contents of a cell is simplicity itself. The F8 key displays the contents of the cell under the current cursor position in the top left hand corner of the screen. The label, value or formula can then be edited using the usual Commodore insert and delete keys.

F7 is the key to everything, giving access to a menu of all the major Easy Calc commands and functions, and is the gateway to the others, so if in doubt ... push F7.

Output

The contents of the whole sheet can of course be saved to tape or disk for future reference; specific parts of the sheet cannot be saved. Even on tape the process only takes nine minutes, which is fast enough for most applications.

Printed output is extremely versatile, though parallel printers are not supported. There are three options: a screen dump of everything, including the row and column identifiers, but excluding the first three command lines of the sheet; a printout of all or part of the sheet; or formatted printout. The last two allow the number of rows to be specified together with the names of the columns to be included, and the identifiers are not printed.

In the latter, the width of each individual column can be set, and the column order can be altered.

If all that doesn't satisfy you, data from the spreadsheet can be displayed as a histogram (figure 2) on the screen, which can then be dumped to the printer. The colour of each bar can be set to one of the 16 available and up to 8 consecutive values in any row or column can be included on the chart. The axes are automatically scaled. The title and units of the horizontal axis are user definable. Certainly impressive stuff!

Documentation

The documentation consists of a glossy 100-page A5 booklet. It is divided into three parts, the first of which introduces the purpose of the cartridge and the special function keys it gives the keyboard.

Part two contains four lessons which graduate the user from first principles up to the most sophisticated functions of the spreadsheet. The examples used are interspersed with colour screen photographs so you know exactly what to expect. All the commands appear in bold print to avoid confusion.

Thje final part is an extensive summary of the commands explained in previous lessons. A brief appendix containing error messages and some blank sheets for notes completes the documentation.

Considering the product is Swedish and must have been


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translated, the English and spelling is good. I found only two insignificant mistakes. The style is 'user friendly' and will have even the most inexperienced producing useful sheets within a few hours.

Conclusions

Easy CalcResult lives up to its name; it is genuinely easy to use! The commands and mathematical format are so similar to Basic that learning to use the sheet is relatively painless, assuming you are familiar with the language. It also makes good and familiar use of the Commodore editing keys.

At £45 it is less than half the price of its big 3D brother CalcResult but maintains many of its advanced features. All that is needed to use the spreadsheet is a 64 and cassette. A disk will obviously speed things up, and a 1515/ 1525, 1520 or 1526 printer is required for hard copy. Easy Calc also lacks the ability to add or subtract (merge) several sheets.

Easy CalcResult is an excellent product, offering the home/small business user a relatively inexpensive but sophisticated spreadsheet for the family budget or business accounts.

CalcResult

CalcResult incorporates all the features of Easy Calc, and more!

Instead of referring to the manual a set of HELP screens can be called from disk, giving brief but concise details of the commands. These screens are very cosmopolitan, offering English, German, French, Italian, Dutch, Swedish and something called Suomeski (*Finnish? – Ed.*).

The border, background and foreground colours may be set individually to any available on the 64. The maths functions also include the normal trigonometrical expressions.

Easier disks

Disk-handling is much improved over Easy Calc. A listing of the disk directory can be displayed on the screen without disturbing the sheet in memory. Disks may be formatted, and a backup copy can be made from drive 0 to 1, if you are affluent enough to own two drives. Individual disk files can be deleted as necessary.

The sheet data can be saved in two formats, normal CalcResult format and Data Interchange Format (DIF) which enables the data to be interpreted by other programs using DIF, and it also allows CalcResult to read DIF files created by other programs. The makes for a very flexible package. Up to 32 sheets can be created like consecutive pages in a book. The first page format is created and copied on to the subsequent pages. At first all the pages are identical except for page numbers. Each individual page can then be edited to reflect its purpose i.e. the department or month it applies to.

The Display

Two pages can reside in internal RAM at one time and either one can be viewed on the screen.

Alternatively the screen may be split horizontally or vertically, with different pages shown in different halves, each half being scrolled independently to compare values and results, or both screens can be synchronised to scroll together.

In addition a rectangular window can be created on the screen displaying the contents of another page. This window may also be split horizontally or vertically. By combining split screens and split windows it is possible to display the contents of four pages simultaneously.

Unlike Easy Calc, pages can be added together. There are two alternatives, the whole page including LABELS, VALUES and FORMULA can be added, or LABELS, VALUES and VALUES calculated by FORMULAE are added.

Manipulating worksheets

How do you add LABELS and FORMULAE, you ask? Well, the contents of the first page are moved to the SUM page 32. If the next page contains a LABEL at a co-ordinate which is empty on page 32, then the LABEL is inserted. If a LABEL does exist, the LABELS are compared and the differences reported after the summation, the first label remaining unchanged. Formulae are treated in the same way.

Pages cannot be subtracted directly; instead the page to be subtracted must be negated and then added. Individual pages can be renumbered, deleted or cleared.

To make the most of CalcResult, two disk drives are

CalcResult Commands

The CalcResult commands are shown here together with a short explanation of each command and function as they are shown on the help screens – press 'F5' when in any command for the screen

KEY:
CR + CalcResult only
ECR + Easy CalcResult only
CR, ECR + available in both CalcResult and Easy CalcResult

System Commands

B:Blank	Cancel contents of cell under cursor – CR, ECR
D:Disk command	For disk communications or user register – CR
E:Edit command	For screen and printer – CR, ECR
F:Format command	Individual cell – CR, ECR
G:Global command	Global format and column width – CR, ECR
L:Leave	Title, split-screen and window – CR, ECR
O:Order	Of recalculation – CR, ECR
Q:Quit	Quit program – CR
R:Recalculate	Automatic or manual – CR, ECR
–:	Automatic repetition of characters at cell under cursor – CR, ECR
T:Transport	Disk or tape communication – ECR

Disk Commands

B:Backup	Drive 0 to drive 1
C:Catalogue	Directory of drive 1
D:DIF-file	For saving and loading DIF-files
E:Erase	Scratches file on drive 1
I:Initialise	Drives 0 and 1
L:Load	File to work area
N:New	Disk is formatted in drive 1
S:Save	Work area to drive 1
U:User Register	Containing language for help screens, type of printer and paper format

Edit Commands

C:Copy	Data area to another area –CR, ECR
D:Delete	Row or column – CR, ECR
G:Graphic	Histogram (CR) Barchart (ECR)
I:Insert	Row or column – CR, ECR
M:Move	Data area to another area – CR, ECR
P:Print	Worksheet or user-defined format – CR, ECR
R:Replicate	Data area to other areas –CR, ECR
S:Split	Screen (hor/vert) – CR
T:Title	Protects a title in the left column – CR, ECR
W:Window	Insert window – CR

Format Commands

C:Colour	Select colour – CR, ECR
G:Global Cell	Sets global format – CR, ECR
G: Global Global	Sets normal format – CR, ECR
M:Maximum	Sets maximum precision display mode – CR, ECR
I:Integer	Sets integer display mode – CR, ECR
$:	Sets 2 decimal display mode – CR, ECR
L:Left	Sets contents at left – CR, ECR
R:Right	Sets contents at right – CR, ECR
***:**	Replace integer number with corresponding number of stars, always left adjusted – CR

required, 0 and 1, disk 0 holding the program and work area, disk 1 holding the page data files. Two full pages can be held in the 64's internal memory, with one in the disk's work area. The other pages are drawn from the data disk as they are required.

With a single disk drive the program, work area and data are all stored on the same disk, requiring more disk changes for multiple pages.

CalcResult Functions

Command	Function
MAX)	Finds the maximum, minimum
MIN)	values of a row, column or matrix
COUNT	Counts the number of fields containing a valid value or formula within a row, column or matrix
MEAN	Calculates the average of an area
SUM	Sums the contents of a row, column or matrix
STDDEV	Calculates the standard deviation of an area
ABS	Returns the absolute value of a number just like the Basic equivalent
%	Converts a value into a percentage
NPV	Calculates the next present value

Documentation

Surprisingly, in comparison with the Easy Calc manual there are numerous spelling and English mistakes. The additional facilities are not particularly well explained, and the way in which internal memory, the work file and data files operate is rather confusing.

Conclusions

CalcResult is an extremely sophisticated 3D spreadsheet, suitable for small-to-medium-sized businesses. It is possibly too advanced for use in the average home, but Easy Calc fills that gap. Its main failings are the manual and its inability to support non-standard printers. With persistence it is possible to interpret the manual and master the impressive features of this advanced product.

PRODUCT	EASYCALC	CALCRESULT
Max No. ofRows	63	63
Max No. of Cols	254	254
No. of Cells	16002	32pp X 16002
Function		
Mean	*****	*****
Count	*****	*****
Max	*****	*****
Min	*****	*****
STDDEV	*****	*****
SUM	*****	*****
NPV	*****	*****
Conditional Option	*****	*****
Maths Functions	****	*****
Commands		
Edit Cells	*****	*****
Recalculate	*****	*****
Copy	*****	*****
Delete	*****	*****
Insert	*****	*****
Move	*****	*****
Replicate	*****	*****
Goto	*****	*****
Merge	N/A	****
Cursor Control	*****	*****
Formatting		
Colour	***	*****
Cell Format	*****	****
Global Format	****	****
Justification	*****	*****
Column Width	*****	*****
Output		
Graphics	****	****
Disk	*	****
Tape	*****	N/A
Disk Commands	*	****
Printout	****	****
Split Screen	*	*****
Window	N/A	*****
Other Functions		
Function Key Use	****	*****
Find	N/A	N/A
Page Facilities	N/A	***
Documentation	****	***
Presentation	*****	****
Overall Total	140	158
Price	£45.00	£99.00
Value for Money	3.1	1.6
Format	Cartridge	Disk plus dongle
Supplier	Handic Index House Ascot Berkshire SL5 7EU	Handic Index House Ascot Berkshire SL5 7EU

To compare

ABRACALC	
– price	£27.50 (disk version)
– value for money	2.4
BUSICALC 2	
– price	£18.61 (disk version)
– value for money	1.5

Page commands (CR only)

A:Add	Pages, checking that labels and formulae match
C:Copy	One page to another
D:Delete	Page from work area
E:Erase	Work area
G:Get	Page from work area
N:Negate	Changes signs (+ and −) in one page
P:Put	2nd Page area to work
R:Renumber	Page
+:	Add pages, values and formulae only

Cheap correspondence quality:

the Juki 6100 daisywheel printer reviewed

by FRED REID

The Juki 6100 has to be just about the lowest-priced daisywheel printer around at the moment – over £100 cheaper than the Smith Corona TP1 – and has been since its introduction in May 1983. Before that, you could easily have paid out twice as much for little or nothing more.

As you're probably aware, printer prices vary a fair bit from shop to shop. But I've seen this one advertised at £375 (inc VAT) even though the maker's recommended price is £459! It pays to shop around a bit ...

As printers go, this one is fairly large (it measures 540x380x160mm and weighs in at 14kg); but then it takes paper up to 13ins wide, so the printer itself has to be big. It still manages to look rather sleek.

Paper setting is ridiculously easy (even one-handed), and the friction feed keeps continuous paper under tight control. It's intended, of course, for single sheets like headed notepaper rather than continuous stationery, although a tractor feed is available for an extra £99.

A word or two on the manual: it's long and fairly comprehensive, but still suffers from poor translation from the Japanese. (Most of us are well used to that by now.) It adequately covers setting the ten DIP switches (located quite accessibly just inside the top cover) and gives detailed descriptions of the control codes and the 47 ESC (escape) codes.

The DIP switches allow you to set auto/manual line feed, impression level, buffer mode, character set, continuous or single sheet stationery, form length and line spacing.

Features

If I were to describe all the features of this machine I would be here all night; it's a pretty full specification – see the panel – but here are some of the more unusual characteristics.

The Juki uses standard Triumph-Adler print wheels and IBM ribbons, both of which are easily bought and fitted (not much discounting on prices, though; you'll get the best deal from an office supplies shop rather than a high street stationer).

The print head is driven by a linear motor to give good positional accuracy, and that also simplifies the internal mechanism; no problems here at all.

The front panel has three flat 'membrane' switches for form feed, pause and reset. The spacing selector switch allows selection of 10, 12, or 15 characters per inch, or proportional spacing (means that an 'i' takes up less room than an 'm' on the paper). If you switch on while pressing the form feed button the Juki does a self-test, checking its internal RAM and printing out its entire character set until switched off again.

The printer comes as standard with a parallel (Centronics) interface, with optional RS232 (serial). We ran it from a variety of printer adapters without any trouble, Centronics being preferable of course – much easier to run from Commodore programs.

Many functions can be programmed from the host computer – including the number of lines per page, horizontal and vertical tabs, line feed (by 1/48in increments), column spacing (by 1/120in increments), plus a host of word processing functions like proportional spacing on/off, offset selection, underlining and emboldening (even underlined and emboldened text at the same time). All this for under £400? I still find it hard to believe!

On the other hand ...

Minus points – in operation it is definitely on the slow side. It's rated at 17 characters per second, but it is bidirectional (the print head doesn't have to return to the left side before the next line is printed). Also, to help the printer work at a constant speed, it has a 2KB buffer to increase throughput.

Despite plenty of sound proofing it's a little noisy. But then that's true of any daisywheel printer because of the mechanicals involved and the sheer force needed to thump a solid letter on a daisywheel stalk against the ribbon and on to the paper.

All this pales into quibbling when set against the thing's controllability and print quality, and its handling of graphics.



Pretty pictures

Graphics can be achieved by making use of the 6100's positional control. Move the print head, or move the paper, and print a dot (or any other character including a couple of right angles and straight lines), enabling plotting, drawing, or letterheads to be produced. I found it easy to program the various characters into variables and use "Print#".

The daisywheel supplied contains the various special symbols used in American and other European texts, including '#', '$' and '¢'.

So, to sum up: there's nothing cheap about the construction of this machine, it looks set to stand up to the rigours of office life, and would certainly not be out of place in the home. It's up to you whether you spend the extra for more features, or go for a great little machine at an easy price. But, if you're still in doubt, try one for yourself!

Under review	**Juki 6100**
Description:	**Daisywheel printer**
Supplier:	**Micro Peripherals Ltd** **61 New Market Square** **Basingstoke** **Hants**
Telephone:	**0256 3232** **(and other sources)**
Summary:	**Ace.**
Price:	**£459 – £375 (shop around)**

Review

JUKI MODEL 6100

Specification

PRINTING CHARACTERISTICS	
Print Rate	20 cps (Av.18 cps Shannon Text)
Printing system	Daisywheel
No of printing characters	100 characters
Horizontal feed pitch	1/120" min
Printing sizes	10, 12, 15 cpi + Proportional (Switchable)
No of characters per line	
10 cpi	110 characters
12 cpi	132 characters
15 cpi	165 characters
PS Mode	82-220 characters
Carriage return time	1000 ms max over 11"
Spacing time	50 ms max over 11"
Interline distance	1/48" (1/96" possible via ESC sequence)
Line feed time	5N + 20 (settling time) milli-seconds (N = Line spacing (inches) /1/96"
Line feed speed	2.08"/sec + 20 ms (settling time)
PAPER HANDLING	
Paper feeding system	Friction feed bi-directional
Options	Tractor feed and Cut sheet feeder
No of copies	Original + 3 copies
Printing line	11" max (platen size 13")
Impression control	Automatic in 12 steps by character size and 2 steps with dipswitch
Feed knob	Right and left knobs. Right knob has variable setting for slight adjustment
PROTOCOLS	
Diablo	

INTERFACE	
Standard	Centronics Parallel
Optional	RS232-c Serial (300-2400 baud) 20 ma Current loop
BUFFER SIZE	
2K byte standard	
RIBBON	
Cartridge (IBM 82 compatible)	
RIBBON LIFE	
Single strike film	160,000 characters
Multi strike film	480,000 characters
NOISE LEVEL	
Less than 62dbA (at 1 metre)	
MTBF	
2500 hours at 25% duty	
POWER REQUIREMENT	
100VA, 220/240V; 50Hz	
POWER CONSUMPTION	
Idling - less than 30W	Running - average 50 W
ENVIRONMENTAL	
Ambient temperature	5 - 35°C (running) -40 -55°C (storage-packed condition)
Relative humidity	30 - 85% (running) 5 - 90% (storage-packed condition)
WEIGHT	
Less than 12.5 Kg (28lbs)	
DIMENSIONS	
520mm W x 454mm D x 151mm H	
20.5" W x 17.9" D x 5.9" H (Knob dimension is included in width)	

Control Codes

ACK	Acknowledge - transmitted when buffer encounters ETX code
BEL	Bell - sounds an audible buzzer alarm for 0.5 sec
BS	Backspace - 1 print position (normal); 1/60" (graphic mode)
CR	Carriage Return
DC 1	Printer set in select condition - data can be transmitted
DC 3	Printer set in de select condition - cannot receive data
DEL	Delete - ignored - use ESC sequence to print corresponding character
ETX	End of Text (serial interface) - transmitted at end of a data string
ECS	Escape - special features provided by ESC + character codes
FF	Form Feed - sets TOF or top margin on next page
HT	Horizontal Tab - moves paper to next set HT stop
LF	Line Feed - moves paper up one line (1/48" in graphic mode)
NUL	Null - ignored in all modes - can use as spare code
SP	Space - moves carriage one print position
VT	Vertical Tab - moves paper to next set VT stop
ESC 1	Sets horizontal tab stop at current print position
ESC 2	Clear all horizontal and vertical tabs
ESC 3	Graphics mode ON (cleared by CR)
ESC 4	Graphics mode OFF
ESC 5	Forward print mode ON
ESC 6	Backward print mode ON (cleared by CR)
ESC 7	Print suppression ON (cleared by CR)
ESC 8	Clear horizontal tab of current position
ESC 9	Set left margin
ESC Ø	Set right margin
ESC HT (n)	Inititiate absolute horizontal tab to print position (n)
ESC LF	Perform negative line feed
ESC VT (n)	Inititiate absolute vertical tab to line (n)

ESC FF (n)	Sets lines per page to (n)
ESC -	Sets vertical tab stop at current position
ESC CR P	Initiate remote set
ESC RS (n)	Set line spacing index to (n-1)
ESC US (n)	Set column spacing index to (n-1)
ESC C	Clear top and bottom margins
ESC D	Perform negative half line feed
ESC U	Perform half line feed
ESC L	Set lower page margin at current position
ESC T	Set top page margin at current position
ESC Y	Print the wheel character under ASCII code SY1
ESC Z	Print the wheel character under ASCII code SY2
ESC H	Print the wheel character under ASCII code SY3
ESC I	Print the wheel character under ASCII code SY4
ESC J	Print the wheel character under ASCII code SY5
ESC K	Print the wheel character under ASCII code SY6
ESC/	Enable auto backward printing
ESC\	Disable auto backward printing
ESC S	Set column spacing index to value defined by SPACING switch
ESC P	Proportional spacing ON (cleared by ESC S)
ESC Q	Proportional spacing OFF
ESC DCI (n)	Offset selection - cleared by CR
ESC E	Auto underscore ON
ESC R	Auto underscore OFF
ESC O	Bold Print ON (cleared by CR)
ESC W	Shadow Print ON (cleared by CR)
ESC &	Bold/Shadow Print OFF
ESC %	Set carriage settling time
ESC N	Clear carriage settling time (normal mode)
ESC BS	Backspace 1/120"
ESC X	Cancel all WP modes except Proportional Space
ESC SUB R	Remote error reset
ESC SUB I	Initialise the printer
ESC SUB 1	Request status byte

Specifications are subject to change without notice

mp Micro Peripherals ltd
'THE POWER BEHIND THE PRINTED WORD'

COMMODORE user
A PARADOX PUBLICATION

Deals for Readers

Welcome to DEALS FOR READERS, a collection of Special Offers from Commodore User Magazine.

This Catalogue offers you excellent deals on Vic and 64 products. Some of them, like the dustcovers and the Victuals tapes, we have produced ourselves. The others are things that we regard as Good Ideas and Good Value, mostly items we reviewed in Commodore User before we decided to sell them. On most of those we have fixed up discounts for readers (while we aren't allowed to sell books at cut price, we can include P&P in our price).

If you want to take up any of the offers, just use the Order Form on the back page. And take a look through the Catalogue: even if you don't want to buy now, we'd like to know what you might be interested in seeing in future DEALS FOR READERS catalogues – let us know in the space provided on the Order Form.

DESIGN YOUR OWN VIC SCREENS



£4.20

Brilliant idea, though it's simple really: the Cybergram Designs Vic-20 Graphics Aid Pack is a set of overlays and printed sheets on which you can design screen displays. With them you can immediately see the POKE locations you need for display and colour; and you can use successive sheets to set up a specific 'storyboard' from which to organise and visualise the sequences in a graphics program.

Your pack includes planner sheets for the standard 22 x 23 screen and plotter sheets for 1023 x 1023 hi-res graphics using the Super Expander; you also get a set of handy character designer sheets that simplify the construction of your own shapes.

Very neat, very clever – and really useful too. We're glad we can offer the Graphics Aid Pack to you ... and at a discount on the normal RRP of £4.50.

Video Splitters

Aerial and computer both on your TV! Video splitters

This nifty little gadget plugs into the aerial socket at the back of your TV set, and it means you can have your Vic/64 *and* the aerial attached *at the same time*.

No more boring fiddling around to change the plugs, no more unnecessary strain on the wiring!

£1.75



Instant database for your 64

INFOTAPE

Why buy lots of different data storage systems when just one will do? INFOTAPE 64 is a powerful yet easy to use database system for tape users, and stores up to 3,000 data items with you defining the number of fields per record. Totally flexible; and interpretive in nature, with the user having command of what data is stored and how. And file characteristics may be changed after the file has been created. Powerful 19-function calculator is built-in (giving speadsheet capability): batch processor can update or delete all or selected records. A full report generator is included to provide anything from a gummed label for a mail shot to tabular reports...

Normal price: **£16.95**
OUR PRICE: **£9.95**



Special Offer: *When you upgrade your system to use a disk drive, INFODISK will be able to retrieve your tape records – and your INFOTAPE order from us comes with a £20 off voucher against the disk version!*

A RECOMMENDED ASSEMBLER

for Vic or 64

Tape: £17.95
Disk: £19.95

Our reviewer (June 1983 issue) concluded that Elmhirst's OSIRISAN assembler was "good value at the price." So we signed up to sell it.

Fast, commonsense operation, good features and lots of them, full error reporting... what more could you ask of an assembler? Except maybe an editor package.

And – would you believe – it comes with FREDITOR, a general-purpose text editor that can be used for *any* text (as a mini-word processor) and /or to create a source file for the assembler. Features save, move, erase, search, instant replace.



£3.99

FALLING APART?

ORDER FORM ON BACK PAGE

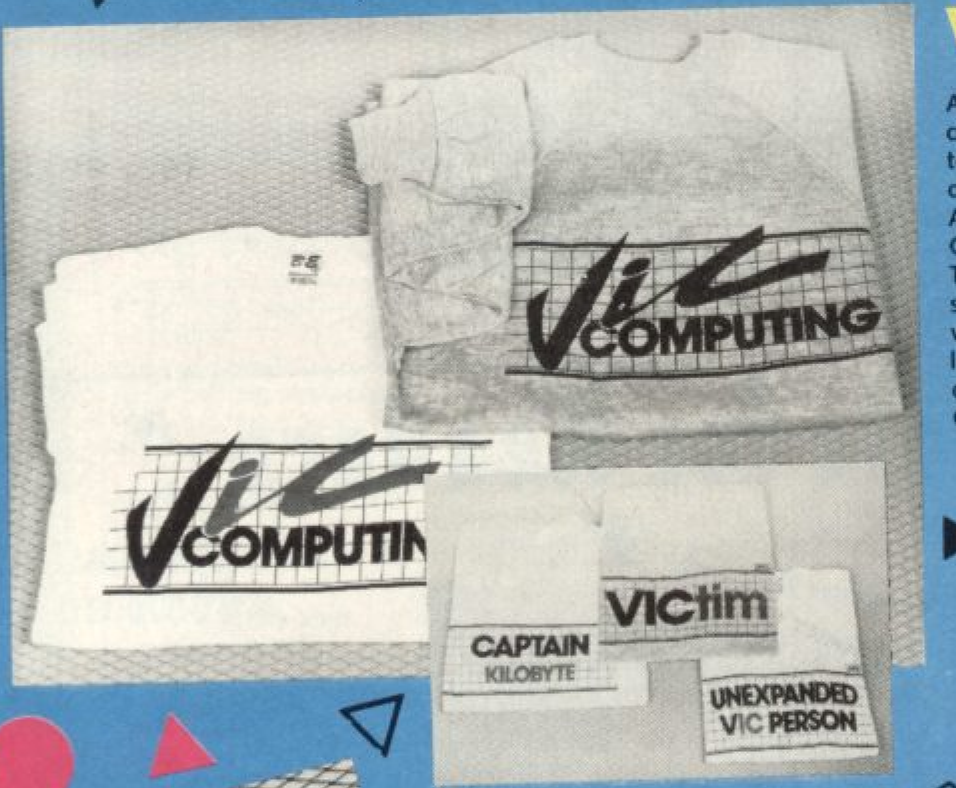
Our Commodore user binder holds 12 issues of the magazine (and Vic Computing fits it too!) Dark blue with the magazine's name in gold: smart, sturdy and sensible – the mags are held in by strong elasticated grips, easier and neater than the kind of binder that has metal rods for the purpose. And compare our price with what other magazines charge you for binders!

VICWEAR

Ah, happy memories . . . our popular collection of good-quality Vic Computing tee-shirts and sweatshirts, all with the characteristic 'Vic Computing' logo.
A choice of four witty slogans or the 'Vic Computing' banner writ large.
Tee-shirts in white, blue or grey: sweatshirts in grey. State colour and size when ordering – we have small, medium, large and extra large. We are running low on stocks, though – check the chart on the Order Form for availability.

Tee-shirts £3.40

Sweatshirts £7.00



TWO

better programs,

We've commissioned two special add-ons for the 64 from Whitby Computers, another company whose products we reviewed and liked. Just look what you get:

DAVID'S BASIC
. . . for better programs

Ways with numbers:
AVG averages elements in an array of numbers
SUM sums elements in an array
MIN finds the smallest number in an array
MAX finds the largest

Ways with strings:
PAD$ fills out a string with spaces
BLANK tests a string to see if it's blank or contains only spaces
SEARCH searches array for given string or pattern
SORT sorts arrays
SPC$ gives a string with a specified number of spaces

Coping with keys:
BREAK cancels the RUN/STOP and RESTORE reset
DISABLE kills RUN/STOP
NOKEY kills effect of specified keys

Extra goodies:
CHINKLE rings a bell
ERROR intercepts program errors, lets you branch to an error-handling routine

Cleverer programming:
CIF conditional IF
CEND conditional END
ELIF ELSE IF
ELSE ELSE
POP removes last subroutine from stack – garbage collection, avoids 'out of memory' errors
PUSH puts a subroutine return address on to stack – simulates GOTO
EXEC a bit like PROC or labelled subroutines – executes a previously specified string as a Basic statement
GTO GOTO a line with a REM followed by a label
GSUB ditto for a GOSUB
ROUT as for DEF FN, but allows you to define multiple-line routines
PER performs routines created by ROUT
ON used as ON <key> GOTO or GOSUB – quick and easy form of GET and subsequent tests
SCAN scans string for given character
SWAP loads another program, retaining all variables
SHR$ compresses a number for compact storage
XPD decompresses a number for use
RESTORE as normal, but can also be used to RESTORE to a given line number

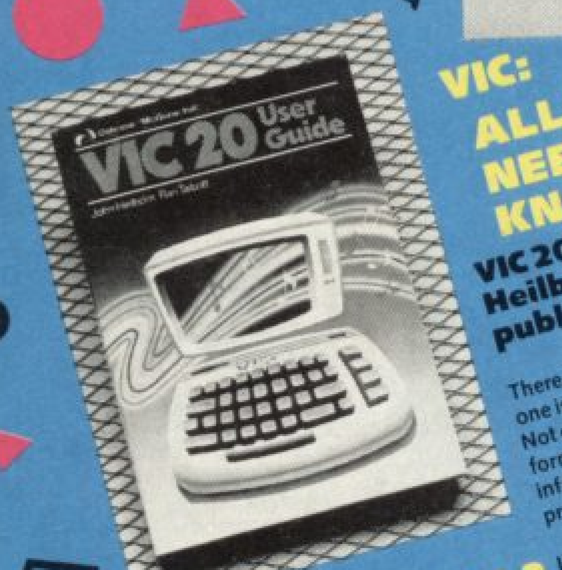
Defter displays:
CLOCK continuously displays the time at stated position
COL$ simplifies use of the 15 colours
CURSOR puts the cursor at the specified x/y position
LWIND Load Window – loads a ready-to-go screen display from disk
SWIND Save Window – creates that display
DISP displays centered message

Easier input:
DATE$ turns a numeric date back into a conventional date string format
DATIN foolproof date input routine
GENIN foolproof input routine – checks input against specified pattern of acceptable characters
NUMIN foolproof numerical input

Perfect printing:
PRINT% automatically justifies columns of money figures
PRINT£ adds true printer tabs
SCOPY screen copy
PCTRL Printer Control – sets device number and other characteristics: one command thus lets you handle different printers from a program
QUME$ use a Qume daisywheel printer for plotting

PRICE: **£27.50**

PRICE: **£27.50**



VIC: ALL YOU NEED TO KNOW

VIC 20 User Guide by John Heilborn and Ran Talbott, published by McGraw-Hill.

There are dozens of books about the Vic. But this one is the best all-rounder we've come across. Not cheap, maybe: but you get a beefy large-format paperback of 387 pages, packed with information and beautifully presented with professional illustrations and clear listings.

Ideal for beginner and expert alike. Hand-holding intro to the Vic; but also includes 'how to use' sections on disk and printer as well. Excellent on graphics and animation, on writing games, on sound (eg a good chunk on combining sound and animation).

£10.95

A GAP ON YOUR WALL?
The Commodore User Poster



£1.75

Remember our February cover, with the enigmatic monk-cum-Renaissance Man looking for the cause of his SYNTAX ERROR?
Well, we produced a poster version of it – and we have a few left over to the first 150 lucky customers. Printed in stunning colour on glossy high-quality paper, A3 size (about 16.5 by 23 ins). Just the thing for your bedroom/clubroom/computer room wall . . .

Sticky keytops? Things falling past the keys into the computer? Don't take the chance. When you're not using your Vic or 64, slip over one of our tailored <u>Commodore User</u> dustcovers – a smart black number featuring the magazine's logo on top. They do keep out dust, but they'll also cope with coffee splashes (anything less than a thunderstorm in fact!), paperclips, cigarette ash, the residue of longhaired cats, and the general detritus of daily life. One size fits all.

MATCHING COVER FOR ANY COMMODORE CASSETTE UNIT

£2.00

Keep your cassette clean too, with a matching black cover – effective, efficient.

Compare our prices. How can we do them so cheaply? And we're not compromising on quality, either: these are some of the best covers we've seen!

WEAR YOUR MAG!

Commodore User tee-shirts and sweatshirts are in good-quality cotton, ideal for late nights in front of the computer or the beach at Torremolinas or the lounge bar at the Pig and Whistle.
Cobalt blue, with the magazine's logo big and bold across the chest. State size when ordering: we have small, medium, large and extra large.



CARTRIDGES FOR THE 64

easier programming!

THE COMMODORE USER TOOLKIT ...for easier programs

What everyone needs:
AUTO automatic line numbering
DELETES deletes specified lines
EDIT deletes forwards – uses RUN/STOP to delete, leaves the cursor where it is
FIND lists all lines containing specified string
HELP lists line where error occurred
LINES instantly calculates the number of lines in your program
MERGE merges program from disk or tape, interleaving lines if necessary
RENU renumber program (including GOTOs, THENs, GOSUBs, etc)
REPLACE finds all occurrences of given string and replaces them with a specified string
TRACE displays last six lines executed in top right corner of screen during execution

Handy for variables:
DUMP lists names and current values of all non-array variables
VAR lists variable names

Sexy sprites:
DESIGN multi-colour sprite editor
SPRITE sets position, colour, mode (expanded, multicolour, transparent) for sprites; turns them on and off
HITBACK detects sprite hitting background
HITSPR detects sprite hitting another sprite
SSPRITE saves sprite data to tape or disk
LSPRITE loads sprite data

Neat extras:
MON Pet-type machine code monitor – commands for display memory and registers, load and save memory blocks, SYS-type execute, return to Basic
USER allows you to add new command words – commands must be previously written in machine code
FUNC defines function keys (the cartridge gives them useful default meanings anyhow, but they can be changed with this)
RESCUE rescues inadvertently NEWed program
SHRINK removes REMs and all unnecessary spaces
CURSOR puts the cursor at the specified x/y position
KILL removes Toolkit commands

PRICE: **£27.50 SPECIAL BARGAIN OFFER:** order the two at the same time and save a fiver – £50 for the pair!



Cut out those SAVE/LOAD errors!

Read/write errors from tape? Mucky keyboard? Grubby screen? Dirt on the tape heads can be infuriating; and who wants a tatty-looking computer?

The Complete Cleaning Kit

Here's the answer – an all-purpose Vic/64 cleaning kit. It contains...
* head cleaner for the cassette deck
* a pack of special lint-free wiping cloths to use with...
* aerosol can of anti-static foam cleanser to lift off grease and dust
* ten anti-static dust-repellent screen wipes
* a package of lint-free cotton bud sticks for those hard-to-get at places (ears?), to use with...
* aerosol can of safe, residue-free cleaning fluid for awkward bits of the tape deck

What excuse can you have now?





KEEP IT CLEAN



GET INSIDE THE 64

Commodore 64 – getting the most from it by Tim Onosko, published by Prentice-Hall.

£7.95

Terrific value for the beginner, especially at the price – 303 large-format paperback pages, a 'from the ground up' all-purpose manual/tutorial/reference for the 64. Concise and sensible, clear presentation, well-written. Appendices include substantial contributions from Butterfield on the 64's memory and excellent exposés of sound and graphics.

If you want to have to use only one book to get on top of your 64, buy this one!

Order Form

The prices below include VAT, and postage and packing – but within the UK and Eire only. European and International orders – please add the amounts given opposite to the prices below:
Expect delivery in 28 days. Contact us if you haven't had your order within that time.
All orders subject to availability.

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All tapes	£ .50	£1.50
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Covers	£ .50	£1.00
Binders	£2.00	£4.00

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D. POKE 36879																
E. UNEXPANDED VIC																
F. COMMODORE USER									£3.75 Blue				£7.75 Blue			

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VIDEO SPLITTER	: no. ☐ at £1.75	....

CLEANING KIT		: no. ☐ at £16.95	....
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	VIC DISK	: no. ☐ at £19.95	....
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	64 DISK	: no. ☐ at £19.95	....
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DAVID'S BASIC CARTRIDGE		: no. ☐ at £27.50	....
TOOLKIT AND DAVID'S BASIC		: no. ☐ at £50.00	....
GRAPHICS AID PACK		: no. ☐ at £4.20	....
BINDERS		: no. ☐ at £3.99	....
INFOTAPE CASSETTE		: no. ☐ at £9.95	....

GRAND TOTAL £.....

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Deals for Readers, Commodore User, The Metropolitan, Enfield Road, London N1 5AZ. 01-241 2448

Suppress the surge

by Albert van Aardt

It is late at night, and you've been working on that program for hours. You decide to SAVE it and carry on tomorrow. The weather has been very heavy, with lots of thunder. And then... a flash of lightning, and your SAVE stops dead in its tracks.

That, my dear friend, was the dreaded Power Surge which killed your disk. Most computers have some kind of surge suppression built in, but disk drives and tapes are a different matter all together. So what can you do about it?

Well, you can read on. This little project won't cover all extraneous electrical problems: but it could help prevent too many ulcers ...

And what is this Power Surge? Well, as you probably know your equipment is set to work between 220 volts and 240 volts. If something like a bolt of lightning creates a 'surge' of 'extra' electricity on the line, the voltage could for a split second soar up into many thousands.

While your equipment might not burn out (although I know of cases where this has happened), delicate things might just hiccup slightly – enough to crash your SAVE.

Surges can come from other sources as well – opening the fridge door, switching on a fluorescent light or the TV, starting the tumble drier. Remember that slight dip the lights took when someone switched on the electric drill? Well, that was a surge – but a negative one.

In other words, power surges can mean an increase in voltage: but you could also get a decrease in voltage. (I have seen a 220 volt line registering 160 volts!)

Kill that surge

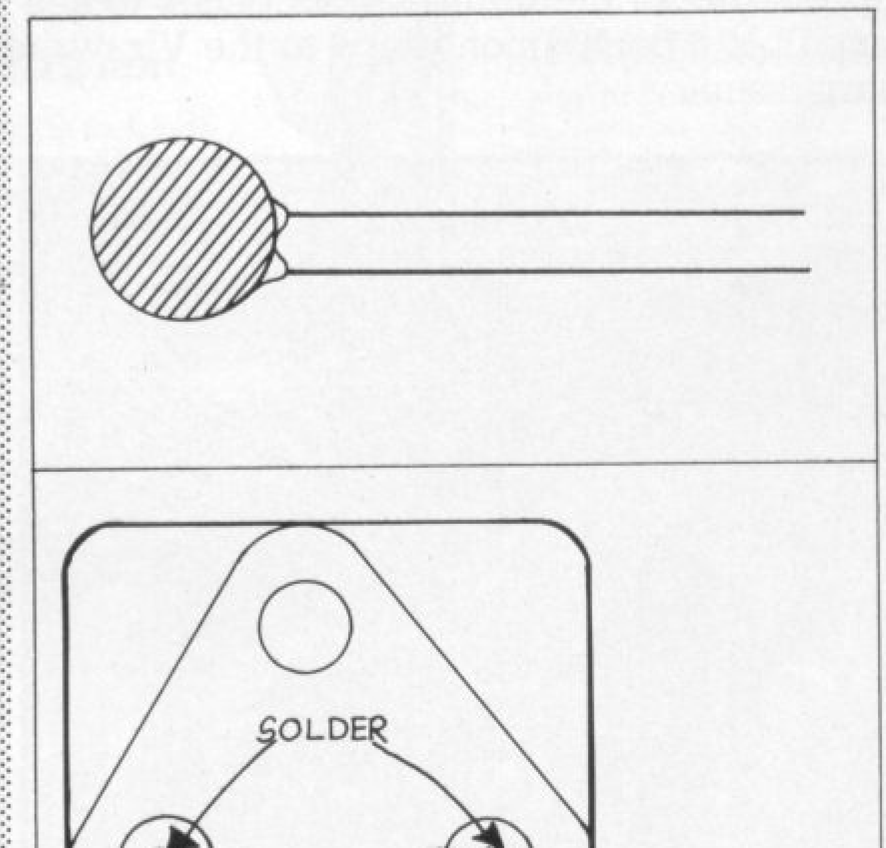
So how can we prevent these surges? Well, you could buy a little black box that is guaranteed to provide a 'clean' current; and you could pay £15 to £500 for it.

Of course the more costly of these boxes also provide a battery back-up, to give you power in case of a total power failure. But the cheaper ones don't. And anyhow, that's something else again – let's stick to surges.

I wasn't preparted to spend just as much money on surge protection as on my computer, so I asked around a bit. Believe me, you only loose a program once because of a power surge before you become worried about it! Or even worse – the data gets written away with loose bits anbd rubbish bytes in between. Ever tried to LOAD a program that has a control bit in the very first line?

It turned out that the Post Office also has the same problem – all that delicate equipment in the microwave towers, and all those famous thunderstorms; well, the two just won't mix. Maybe they spend millions every year on surge suppression? No?

No. The answer is a simple little gadget that retails for less than a quid – a lot less (like 25p?). It is called a 'Metal Oxide Varistor', and looks something like this:





Direct current generator

Just ask for a 'Metal Oxide Varistor, Siemens model SIOV-S20K230' at you local electronics supply shop. You then solder this little critter across the live and neutral wires of your power supply, and close any open wires with insulation tape. (We don't want a nasty little shock when we pull the plug from the wall now, do we?)

I installed mine inside a dubble-adaptor, and therefore have two sources of 'clean' power. Took me about ten minutes, and I haven't had any &&!%%!$"‡ failures since!

(And thanks to Keith Wickens for the leg work!)

Review

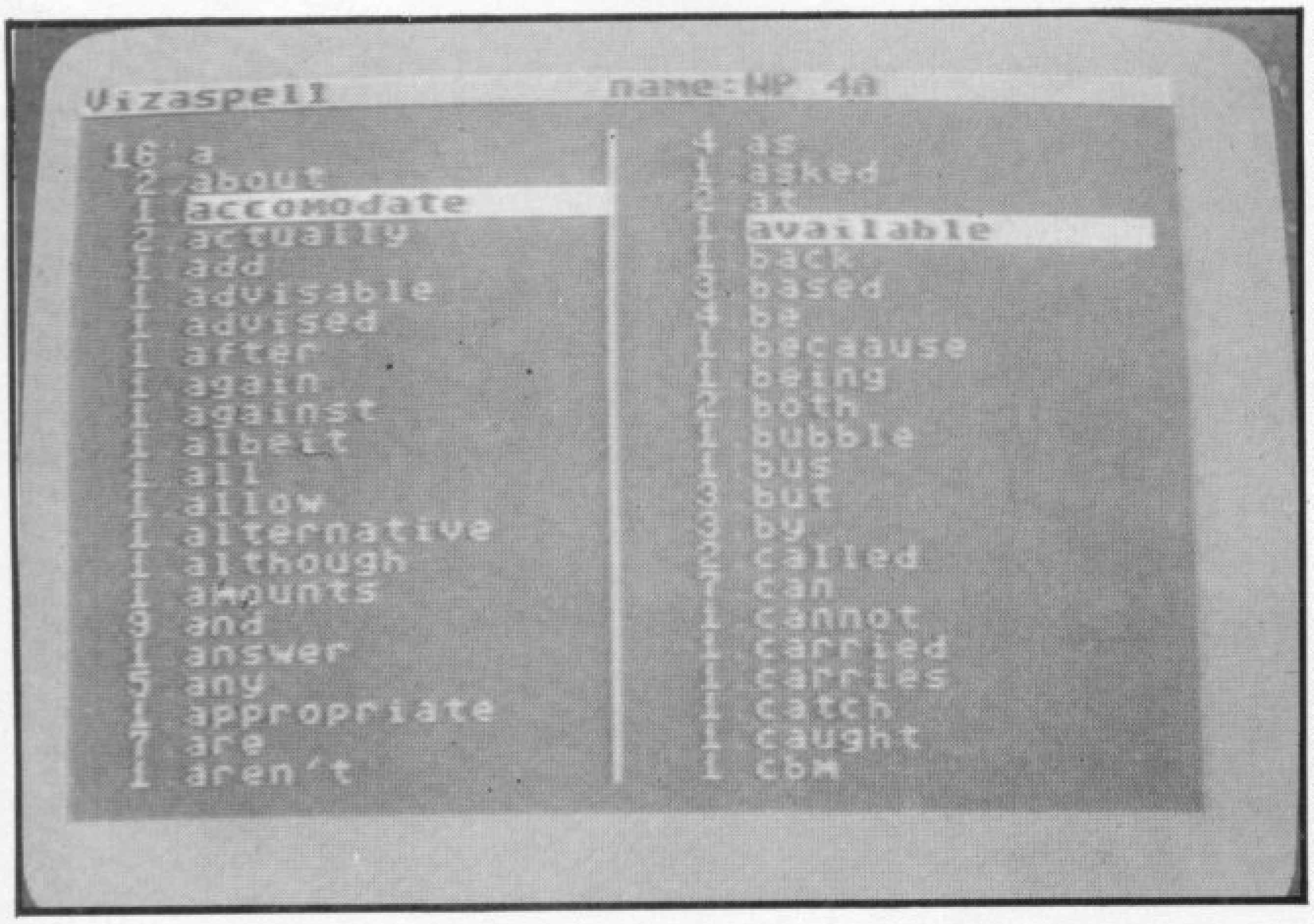
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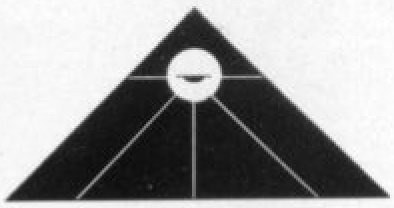
Vizaspell Review

by Chris Durham

Anyone who uses a wordprocessor will know that the problem still remains of trying to find all the 'speeling misteakes and tpying errrors' before sending out a letter or document.

Fortunately there are a number of programs available to remove even this burden; we got Chris Durham to put one of them through its paces to see how useful it really is. Viza Software's Vizaspell is a companion piece to the Vizawrite word processor we reviewed in our February issue.





This is a spelling checker program, used in conjunction with the WP package Vizawrite. It comes on a disk (there is an option to obtain both Vizawrite and Vizaspell on the same disk) costs £67.85.

For those of you who feel this is rather a lot just to correct a few spelling mistakes let me make one thing quite clear from the start; if you type more than about 2,000 words a week on a word processor, you'll find that a spelling checker is one of the most useful programs you ever purchased.

Vizaspell comes complete with a 30,000-word dictionary which you can add to as you go along if you wish – this is a great advantage over those spelling checkers which require the user to build up the dictionary from scratch. Next, the program allows you to search for a word knowing only part of it. Thirdly, Vizaspell is called from the word processor, with no reloading of files to do and without exiting from the WP program: most of the larger-scale spelling checkers sold for the 16-bit business computers don't permit that.

Using the program

Vizaspell is very easy to use. The disk is inserted in the drive and the program is called from Vizawrite by pressing the CBM key with shifted RUN/STOP. The program then loads into memory without disturbing either the WP or the text.

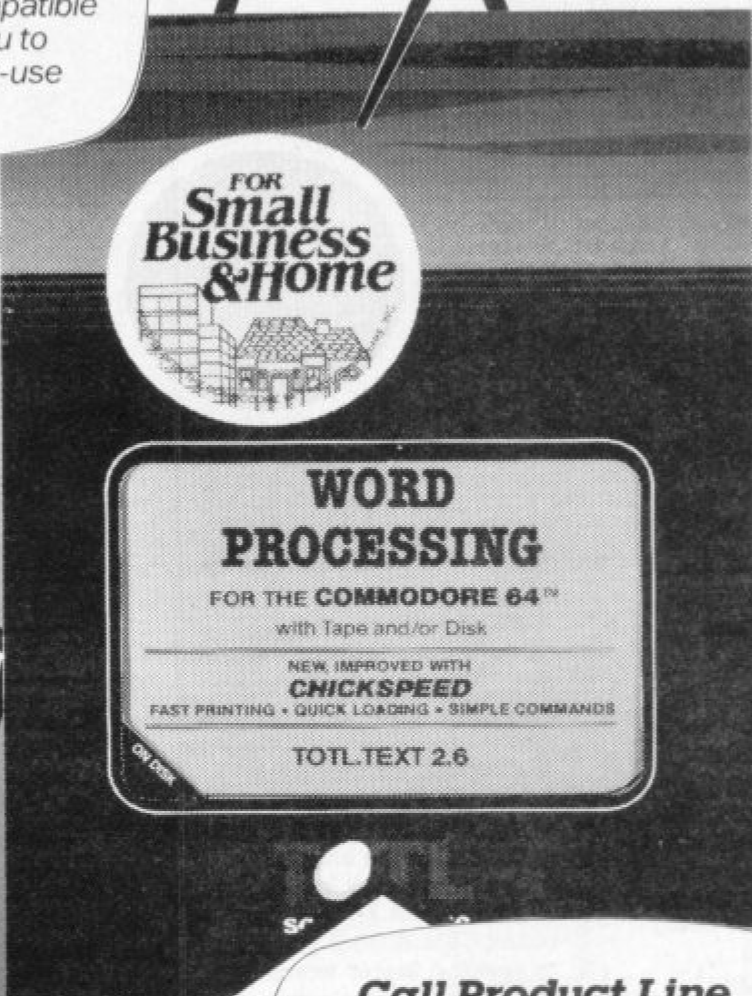
It immediately runs an analysis of the text in memory at the time; and it shows the total number of words, the number of *unique* words used, and the number of

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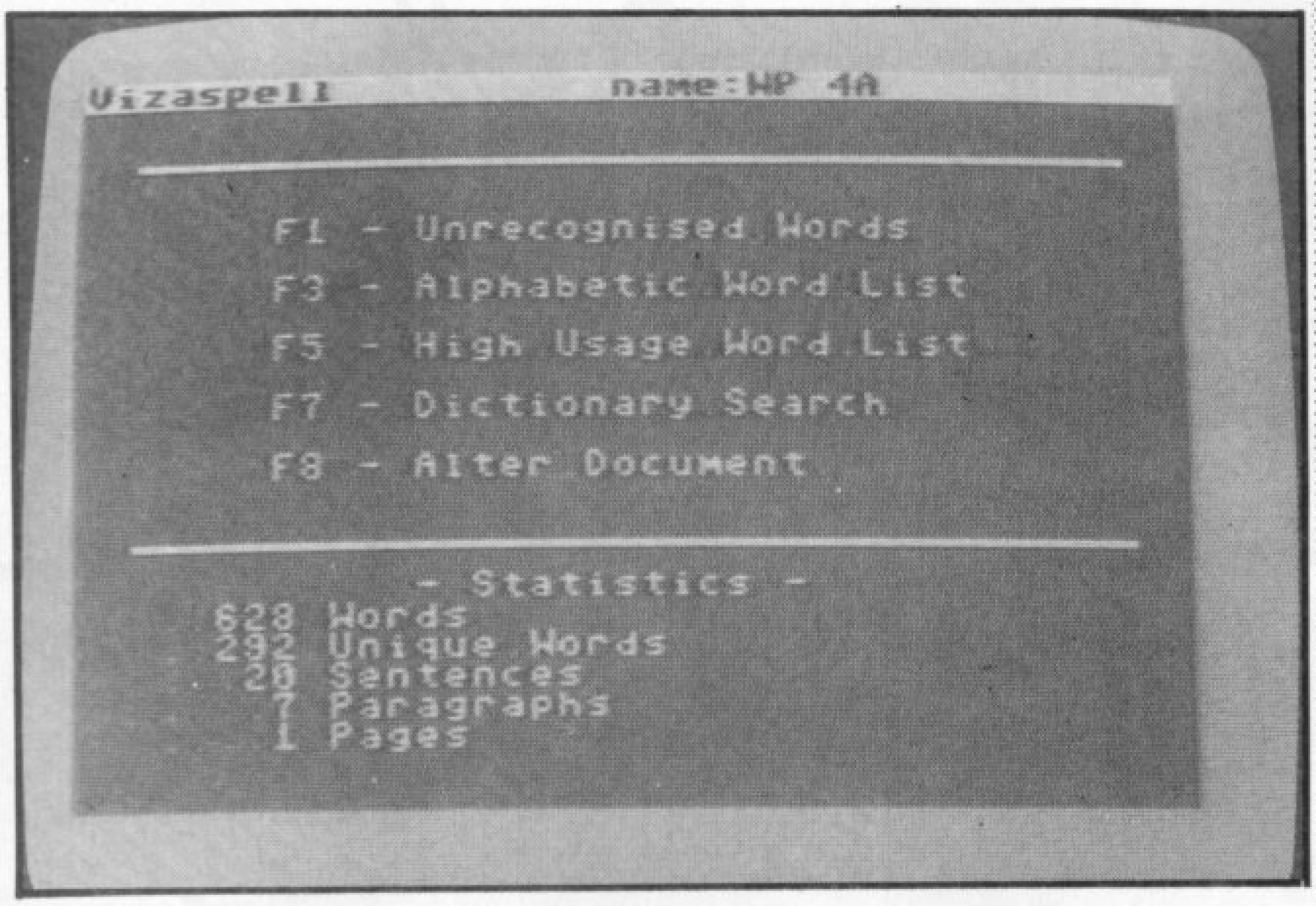
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sentences, paragraphs and pages.

You are also presented with a menu with a number of options; pressing f1 starts the spelling check phase. During this the words are shown in alphabetical order on the screen and a white bar indicates the current word being checked. If a word remains highlighted after being checked, it is not in the dictionary – so it's either incorrect or unknown to Vizaspell.

Once the document has been checked you can obtain a list of all unrecognised words so that you can check the spelling if needed before editing the document.

Actually correcting the document is simplicity itself. Typing CBM V (for Verify) starts a checking process which scans through the document and stops at each unrecognised word. You then have the option to Edit, Accept, Skip or Learn by typing the first letter of the required option.

Edit turns off the verify command – which means that, unlike the case with many such programs, you can edit as much text as you like; you are not limited to just the word it stopped on. To continue the check you type CBM V again.

Accept tells the program to recognise this word if it occurs again – in other words, not to stop at the next occurrence. **Skip** means ignore the word this time, but stops if it occurs again. **Learn** stores the word for inclusion in the User Dictionary at the end of the check.

Once the check is complete, Vizaspell must be reloaded (using CBM RUN) if you require to save the 'learnt' words. This merely involves selecting the relevant menu option with the function keys (ensuring that the write protect tab has been removed from the disk). The new words are held separately from the main dictionary, but can be combined by running one of the utility programs on the disk.

Other facilities

There are a number of utilities on the Vizaspell disk, one of which allows you to combine the User dictionary with the main dictionary as already mentioned. This is necesary because the main dictionary is held in a condensed format while the user dictionary words are held in full with about a 200-word limit.

There is a utility to create a copy of the entire disk (except the copy program itself!) or to copy the dictionaries to a second disk. This is very important to avoid losing all the dictionary should there be a disk error when updating the User dictionary.

A useful facility for crossword puzzle addicts is the ability to find words which match a pattern; by loading Vizaspell and selecting the dictionary search option you could type 'p??t?r?' and find all the seven letter words containing the three letters in the positions shown. (But I forgot, **Commodore User** readers would never cheat like that – would they!)

Limitations

Like all other programs of this type, Vizaspell is unable to find a typing or spelling error which is itself a valid word. If you type "there" when you meant "their", the check will blithely ignore it since both words appear in the dictionary.

Likewise it will ignore most errors involving numbers; typing '0f' instead of 'of' or '9s' instead of 'is' will both fail to be spotted. That's a bit more of a deficiency.

If you consider that you would still have to find these mistakes yourself without the spelling checker, bear in mind that two-thirds of a check is better than no check at all. Until someone invents a program which checks whether what you have written makes sense (heaven forbid!!!) then you are still going to have to proof-read the document before sending it off. (*Actually, there is a program called Grammatik on 16-bit micros which claims to check your grammar though all it does is help you to avoid "wordy usages" like "prior to" for "before". It has a section that picks out "sexist" usages like "craftsman", too! – Ed.*)

Conclusions

Vizaspell is an extremely easy-to-use and useful utility program for anyone who uses the Vizawrite WP program. Although it cannot pick up every possible typing and spelling error, it can save a considerable amount of time when checking large documents. It is also usually more accurate than doing it by hand since it will spot many spelling errors you didn't even know were errors.

Whether the price makes it a good buy depends entirely on how much typing you do. But for anyone considering purchasing both the WP and spelling checker at the same time the combined Viza Software disk is definitely good value at a cost of only £99.00 for both.

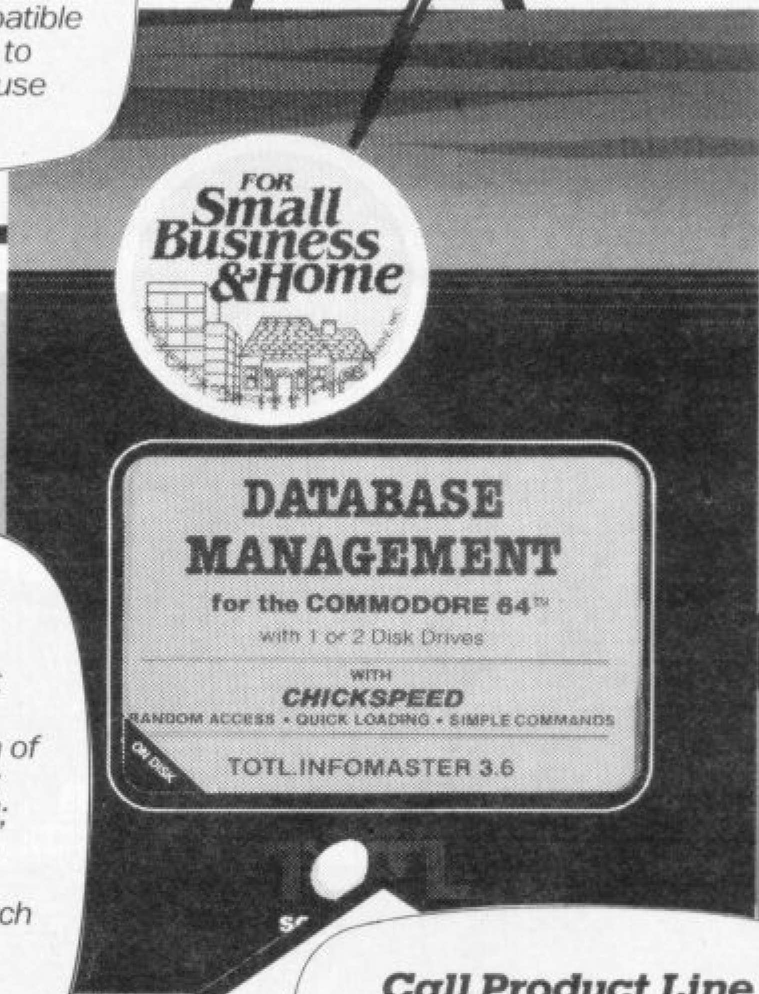
Under review	**Vizaspell**
Supplier:	**Viza Software**
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Summary:	**Low-cost easy-to-use spelling checker good value for prolific typists**
Price:	**£67.85 (or £99 combined with Vizawrite)**

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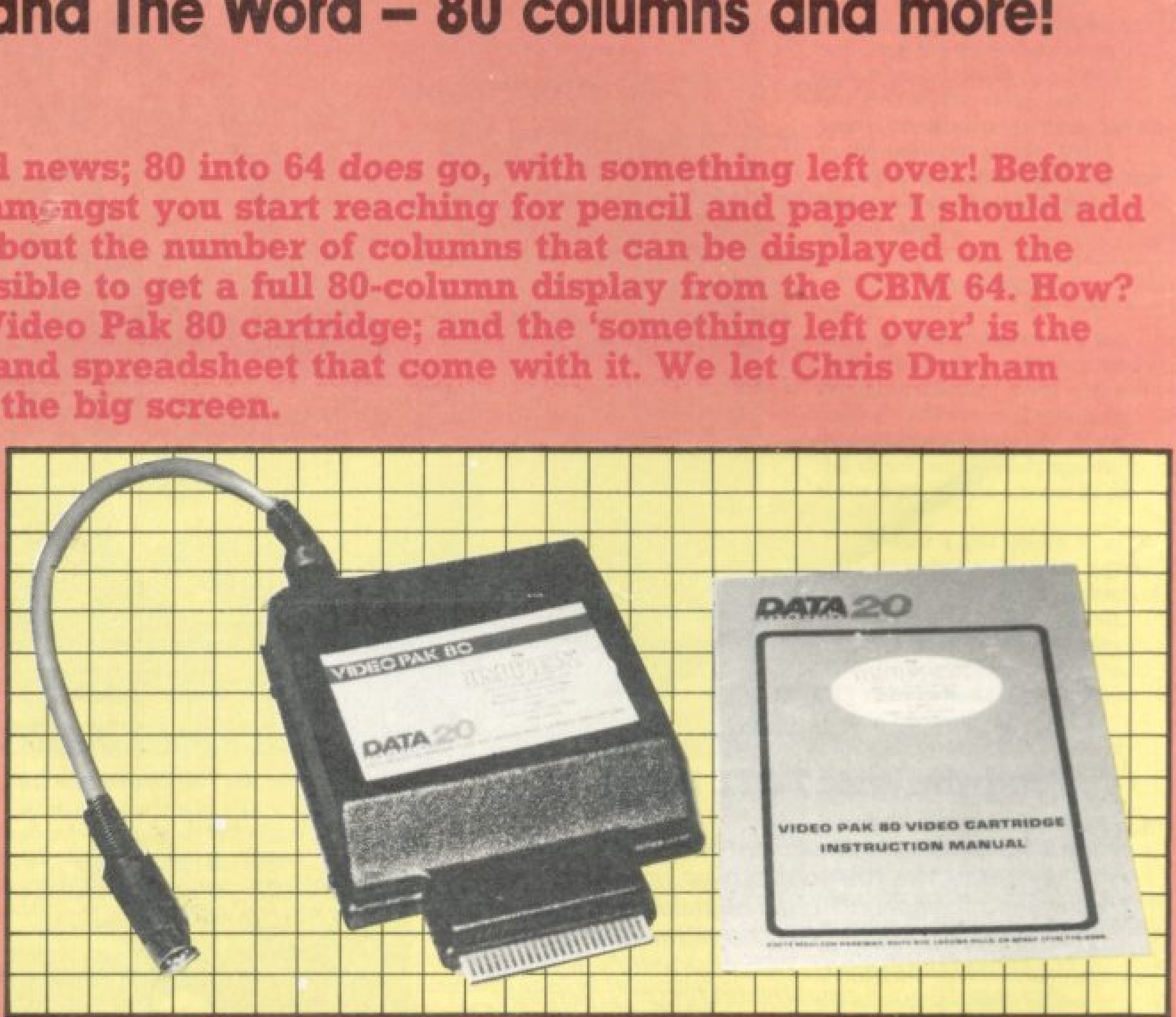
Word processing Road test

Video Pak 80 and The Word – 80 columns and more!

by Chris Durham.

And now for the good news; 80 into 64 *does* go, with something left over! Before the mathematicians amongst you start reaching for pencil and paper I should add that we are talking about the number of columns that can be displayed on the screen – it's now possible to get a full 80-column display from the CBM 64. How? By using the Impex Video Pak 80 cartridge; and the 'something left over' is the free word processor and spreadsheet that come with it. We let Chris Durham loose in the world of the big screen.





There are many ways of trying to overcome the limitations of a 40-column screen when writing software – notably for word processor programs, which really need a screen wide enough to approximate to a page of paper. Those options include horizontal scrolling, reformatting when printing and taking two lines on the screen to equal one on the page.

None of them is entirely satisfactory, however; and getting a system which gives a full 80 columns 'on-screen' is like a breath of fresh air after being in a room full of smokers. So, what can you do with it?

What you get

As you can see from the photograph, the Video Pak 80 cartridge (from Data 20 in the States, sold in Britain by Impex) is a neat and fairly robust box which plugs into the cartridge port of the 64 (there is in fact a new version out now in an even beefier case, colour-matched to the 64). A short video lead which plugs into the monitor output to enable the system to display the standard CBM screen when the cartridge is not activated. There are two five-pin DIN sockets in the rear of the cartridge; the first takes the other end of the video lead, the second is where you plug in your monitor.

And the first thing to note with this system is that you *must* use a monochrome monitor – it will not work with a standard TV. The output signal is not TV-type UHF; and anyway few TVs would be capable of displaying 80 columns with any clarity.

Neither can the Video Pak really be used with the Commodore 1701 Colour Monitor. Its 40-column mode is fine, but 80 columns are very difficult to read – especially letters like 'm' and 'w'.

No, Video Pak is designed for a standard monochrome monitor; and on one of those the display is little short of excellent. I have a small 5in monitor for using my 64 away from home; even on a small screen like this, where the lower case letters are only 1.5mm high, in 80-column mode the letters are clearly readable some two feet away (normal viewing distance). The only time the display breaks up slightly is when you are scrolling the text.

In use

Actually using the cartridge is easy. You can start in either 40- or 80-column mode by typing an appropriate SYS command; thereafter you can swap between modes using the function keys – f7 takes you from 40 to 80, f5 does the reverse.

Once in the required mode you can use the computer as normal for your own programs – taking full advantage of the increased screen width. There are also a number of extra functions available to help: f3 erases to the end of a line, f4 erases to the end of a page. Shifting between upper and lower case is now done by using f1 and f2 respectively. There is also a screen-dump facility (only to RS232 printers, unfortunately – not to Commodore's) using f6; and if you have the right interface, f8 will give you a terminal emulation mode.

Converting your own programs

This is a relatively simple task since all the normal PRINT commands are automatically written to the selected screen. To make full use of the 80 columns, though, you'll have to rewrite most of the print strings or you will only be using half the screen.

Any PEEKs or POKEs in the screen area will also need to be changed; instead of the normal start address of 1024, the screen is now located between 38912 and 40959. As with the print statements you will have to reorganise the layout since you now have twice the number of locations to use.

Obviously, using the 40-column mode only requires a change to

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Q: Which spreadsheet offers an advanced level of formula handling?
A: Autocalc 64 copes easily with trignometrical functions, parenthesis and boolean logic as well as totalling and averaging.

Q: Which spreadsheet accepts complex conditional statements?
A: Autocalc 64 can handle statements as complex as IF a1<4,000 OR a1>8,000 AND a2 = 500 THEN b1=0.

Q: Which spreadsheet offers a flexible screen format?
A: Autocalc 64 allows you to select (i) column widths from 3 to 30 characters (ii) the number of rows/columns you need (iii) up to 2,000 cells of information (iv) text or numerical entries lined up to the right or the left, or a combination.

Q: Which spreadsheet offers a choice of numerical formats?
A: Autocalc 64 gives you a choice of (i) integers (ii) floating decimal point (iii) currency (iv) any combination of these.

Q: Which spreadsheet offers a full 'replicate' facility?
A: Autocalc 64 has an advanced replication function for transferring text, data, formulae or conditional statements from any cell (or block of cells) to any other(s) without monotonous retyping. A 'go to' facility will take the cursor instantly to any cell of your choice — saving time.

Q: Which spreadsheet is easy to use yet advanced in operation?
A: Autocalc 64 is designed to guide you — helpful error reports diagnose input or formulae errors. A full demonstration program and comprehensive instructions are included.

Q: Which spreadsheet is compatible with standard Commodore printers?
A: Autocalc 64 gives you a printout facility using any of these printers: Commodore 1515, 1525, MPS 801, 1526, MCS 801, DPS 1101, Seikosha GP100VC.

Q: Which spreadsheet is 100% machine code for fast efficient responses, and offers a choice of saving to disk (using 1541 drive) or to tape using a C2N unit?
A: Autocalc 64 — as if you didn't know!

Q: Which spreadsheet sells at a realistic budget price?
A: Autocalc 64 costs just £14.95 on tape, £19.95 on disk inclusive of VAT and P&P.

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the screen address. And since there is no colour involved, colour changes and POKEs to the colour map are redundant.

There is one very useful bonus when using Video Pak 80: the ordinary screen area is still available. So you can have both the normal TV screen and the monitor working in parallel. The TV can be used for Hi-res graphics, for example, while the 80-column screen displays associated text.

Full instructions are contained in the small booklet that comes with the cartridge. Although only eight pages long it is more than adequate and explains many functions in at least two different ways.

Limitations

Although you can use your own programs quite happily with Video Pak, commercial software is less likely to be a success – for a start if you can't amend these programs you won't be able to use the 80-column mode properly.

Also, the cartridge takes up the expansion port and does not reproduce it; so no cartridge based programs can be used. No, it won't fit a four slot motherboard either, because of the short length of the video cable!

The result is that at present you are limited to the software written especially for the Video Pak 80 by Data 20. So what's available?

• **Wordmanager:** a lovely little WP program, included on the disk which accompanies the cartridge at an all-inclusive price of £145.95 including VAT (there is a combined package, of which more later). Not the most sophisticated WP I have ever used, but it has the basic facilities necessary for normal correspondence.

It formats as you type, which means that with 80 columns you literally see the whole width of the page as it will be printed. Your document is limited to five pages of 66 lines each, which cannot be altered. Since you cannot normally print on all 66 lines you must remember to leave gaps top and bottom of each page. You can however change the page *margins*, which are set initially at 10 and 74.

The program has tabs, centering and underlining – the last of these done by backspacing, which is slow but workable. There are good 'block editing' functions for moving and copying text, though these are limited to whole lines. (One discrepancy in the manual is that the block edit functions are said to be limited to "three full lines of text"; in fact I moved and copied any number of lines without problem.)

The 64 editing keys work as normal, with one exception. Instead of adding the space to type one character, INST takes you into an 'insert mode' that opens up a large gap – ideal for large additions of text, but a bit annoying if all you want to do is add one letter. Still, that's better than not having an insert mode at all. There is also a useful Search and Replace facility that is easy to use and allows selective replacement.

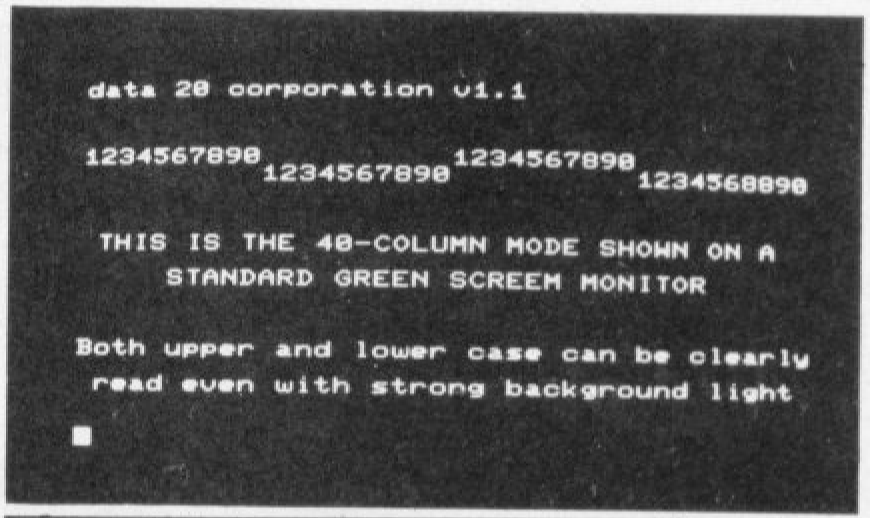
The small (10-page) manual is adequate, and Impex has a splendid self-adhesive 'commands strip' which fits above the keyboard on the 64. Each key on the top line is shown with its respective commands (which are selected by using f1 first). This makes using the WP extremely easy, even for a complete beginner, since you no longer have to search through the manual trying to work out what to do next.

Wordmanager allows both disk and tape to be used for storage, with the ability to change devices at any time. Most disk commands are supported – including file deleting.

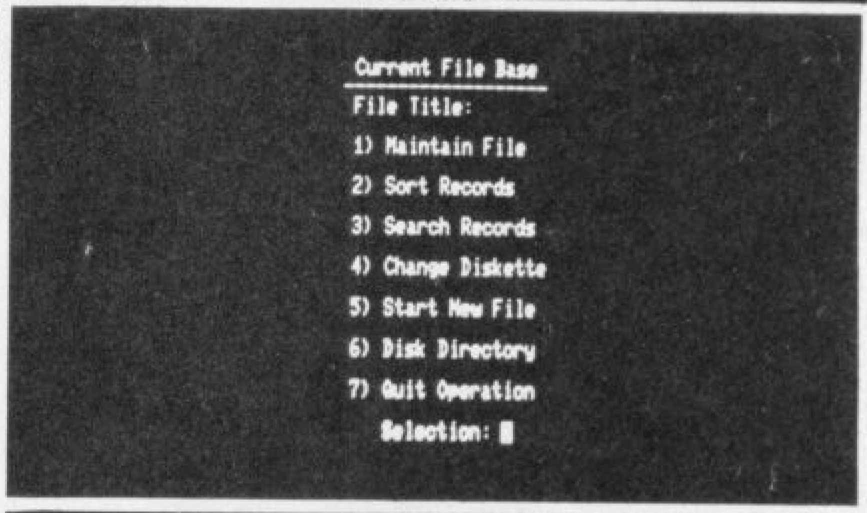
All in all Wordmanager is a delight to use provided you don't need too many fancy facilities.

• **64Calc:** a spreadsheet, also on disk – up to 1,100 cells, with a total of 21760 bytes available for the data. This also comes complete with a 'command strip' and is extremely easy to use. It gives the facilities of most spreadsheet packages and can be scrolled in any direction; there is also a 'go to cell' command which will move the cursor to any cell in the memory. Fields can be expressed as a 'label' (text), value or formula; the last of these includes a SUM facility to add consecutive cells together easily.

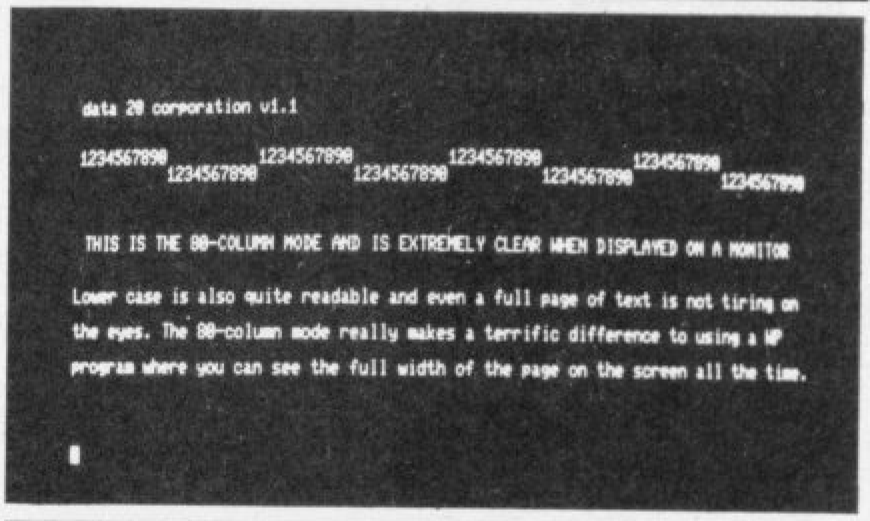
Recalculation can be either manual or automatic, the latter



Impex Video Pak 80 – 40 column mode



Impex Video Pak 80 – enquire PAC menu



Impex Video Pak 80 – 80 column mode

amending the whole spreadsheet each time you change a value field. A model which occupied nearly all the available memory took approximately 43 seconds to do a full update; a much smaller model I tried recalculated in three seconds.

Obtaining printouts is also easy – a 'print screen' function dumps the current screen to the printer. To print the whole sheet in screen format you will scroll through the model dumping each new page. To print the 'structure' of the model (without any values in the cells, just the formulae) needs only one command; this prints all the current settings and also the field types and any options you have selected.

Overall I found this a very neat and useful package for anyone needing a small but pretty comprehensive spreadsheet running on an 80-column screen.

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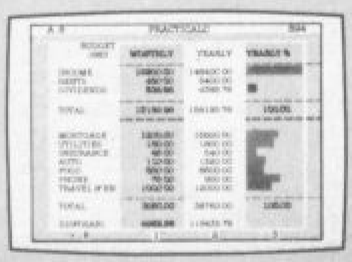
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Practifile 64. The database for Commodore 64.

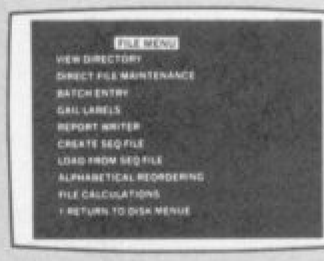
Practifile means an end to bulky and time-consuming storage of files, client or patient information or names and addresses.

And it means you'll no longer have to spend minutes or hours searching through piles of paper for a specific piece of information.

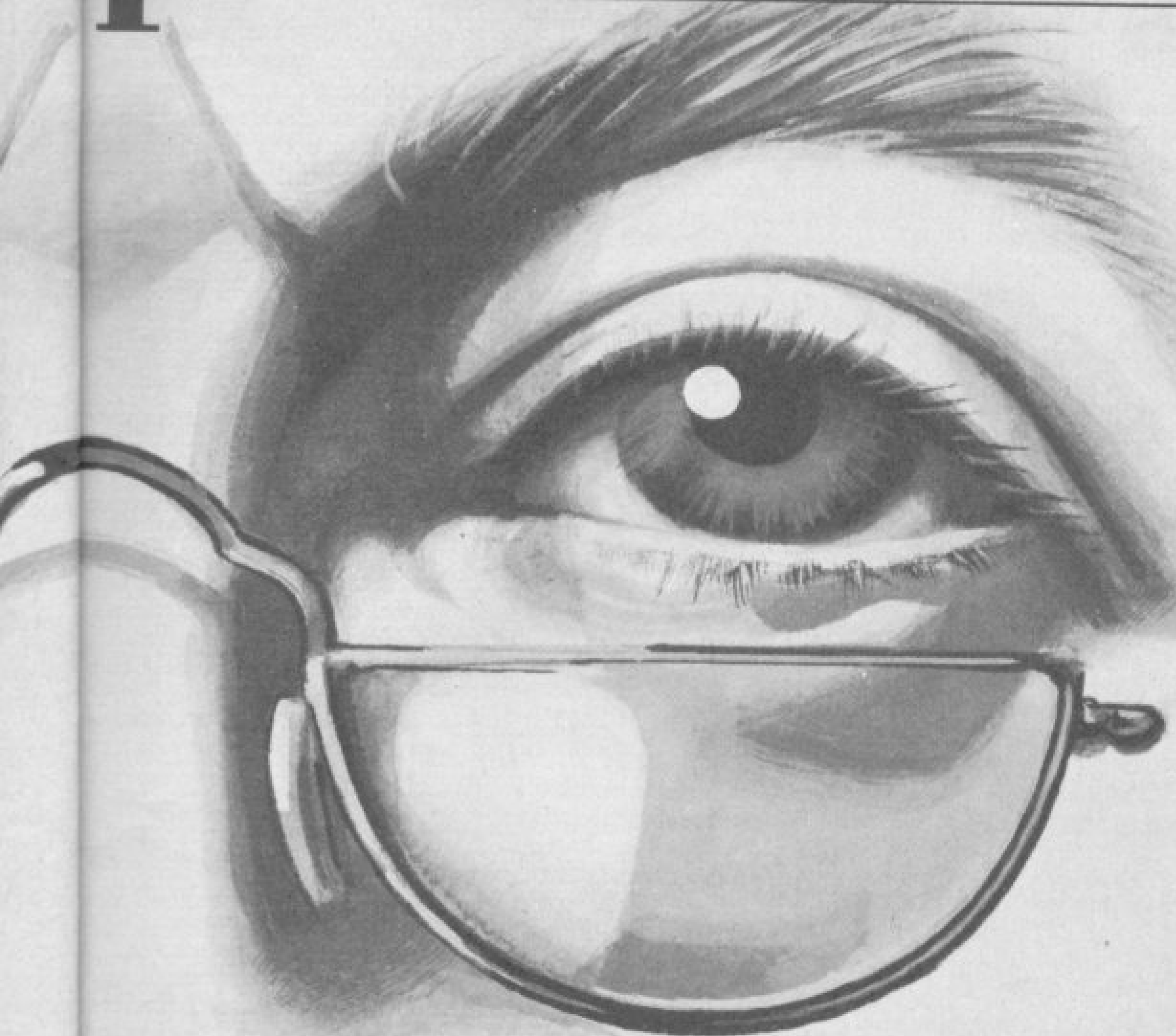
Each file on the program is able to handle 3,800 record entries, and Practifile can sort the files it contains by number or letter in less than a second.

The system is so flexible that you can add, subtract, multiply or divide within individual files, while its use with a word-processing system means that you

Sorts files by number or letter in less than one second. Fully compatible with Practicalc 64.



software from a
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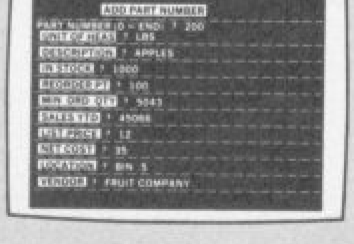
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• **Mail:** another of the programs on the disk, intended to give (limited) mail-merge facilities. 'Limited' is certainly the description; Mail is a rather nasty American thing with states and zip codes (instead of county and post codes!) and it prints the city, state and zip all on the same line without punctuation – ugh!

It can only be used to print the address and salutation at the beginning of the letter; you can't add other information to the letter as well. It can however be used to print labels.

I have to admit that it does the job it's intended for; so use it if you must, but you may have to keep remembering the main virtue is that it's free.

Other utilities

There are a number of other programs also included on the disk; one of these is a copy program to allow you to make back-ups. Also, both the Vic-20 and the 64 versions are included for all programs: so you get the same disk irrespective of the type of machine (Vic-20 versions are available at £125.95 for the Video-Pak plus 8K RAM or £99.99 without the 8K).

Data 20 has definitely come up with a useful package of software for its 80-column board. When one considers the price of individual software packages running in 40-columns this must be good value for money.

The WORD: the real McCoy?

If you want a sophisticated word processor, mailmerge program and database for your 80-column system you can buy a complete package with all these plus Video Pak 80 for only £224.25 (including VAT).

The WORD is in all practical respects the well-known (and well-respected) WP program Paperclip run over 80-columns; the manuals are identical for the most part, and even the security dongles are interchangeable! Since this is the case, all the comments in the review of Paperclip (**CU**, March 84) apply to this package as well – with the exception that the preview facility now allows you to see the whole page and not just half of it. And in case you haven't realised, comparing a WP program to paperclip is praise indeed.

The manual that came with the review copy was actually out of date, with the result that it contained a few errors (we're told these have been corrected in the current version). As with Paperclip, the manual is comprehensive; one difference is that the Word is said to be able to scroll horizontally up to 192 columns whereas in fact it can accommodate up to 250 columns. That's extremely wide, but not beyond the capability of a printer like the FX-100 in condensed mode.

The only real limitation as far as I am concerned is the fact that it formats on printing rather than as you type. This seems rather a waste of having an 80-column screen when you see virtually the same unformatted text as when running on a 40 column screen.

As I mentioned earlier, at least the preview facility makes use of the full 80 columns; but in many respects I preferred using Wordmanager for straightforward letters where I could see exactly what the text looked like. This is very much a personal factor however and will not deter many people from using what really is a first-class WP package.

Inquire Pac: built-in filing

This database program is included when you buy the WORD. It allows up to 200 records on disk, with up to 15 fields per record. Each of the fields can be up to 255 characters long – though that is also the maximum number of characters allowed in a record, so you can have only one field of 255 characters: or 15 fields whose combined lengths come to 255. If you wish to sort on a particular field, it must not contain more than 30 characters.

Within these limitations you can organise the data as you wish. The whole program is menu-driven and fairly easy to use. Only 'fairly' easy, because you do have to know what you want to do with the data before you create the records; that's true however for most such programs, and is no reflection on this one in particular. Spending some time with a pencil and paper getting the record specification right first time before you touch the computer will save you a lot of hassle in the future.

For example, I decided to limit a particular field to 30 characters; later on I found I needed to put more than 30 characters in it, but although I could alter the contents of the field there was no way to alter the size! To do so meant creating a new file completely. Be warned: do your homework.

The sort and search facilities are quite powerful. But there's no 'fuzzy' matching; you have to be very pedantic with your search request. It's also advisable to keep a copy of your record specification handy. Although you can examine the field headings, you can't do so at the same time as requesting a search or doing a sort.

Although an experienced user familiar with the record layout would not find it difficult, I would have liked the program to be a little more friendly in places. If you put a wrong answer in, it either ignores you or reverts to the main menu.

As a general-purpose record-keeping system it could be quite useful, even so. Again, the manual was out of date and contained facilities which no longer exist; but the up to date version has apparently been corrected.

Mail Merge: useful?

Unlike the Mail program, this one is very handy – especially if you wish to combine information held on Inquire Pac with letters written with The WORD: you can extract names and addresses from the database and put them on a separate file which you then run as a mail-merge file with the WP.

This could be used for example to extract the names and addresses of only those firms who supply you with a particular product and then sending a standard letter to them all.

Mail Merge is easy to use and works well. If I have any reservation about it, it is the speed of the disk accesses. Since this is a function of the Commodore serial interface system there is little that can be done; but there are so many disk accesses that at times you can fall asleep waiting ... Actually that applies equally to Inquire Pac on its own. It is one of the crosses owners of the 64 have to bear.

In conclusion

Although I have seen better database systems, none of them will run on this 80-column cartridge: and therein lies the rub. At present you can only run Impex programs if you want the 80-column mode – unless, of course, you write your own.

Still, you could do a lot worse than buy the complete package for use as a small business system together with the spreadsheet and perhaps an accounting package as well. As for buying the basic 80-column package plus a monitor to run it on, it does seem a little expensive until you consider what you get for your money.

Using the 80-column system with a good monochrome monitor and a good set of software is a revelation. Whether a price tag of over £220 for the business package will make it seem worthwhile depends entirely on how much you need the facilities.

Whether the standard system will appeal to the average 64 user only time will tell. Personally, I wouldn't mind one in my stocking for next Christmas!

My thanks to Theme One Records of Blandford for the use of a Commodore monitor.

Under review	Video Pak 80/The WORD	
Description:	80-column adapter and software for Vic and 64	
Supplier:	Impex Designs Ltd	
Address:	Metro House Second Way Wembley Middlesex HA9 0TY	
Telephone:	01-900 0999	
Summary:	Exciting but expensive – needs monitor.	
Price:	Basic Video Pak 80	
	CBM 64	£145.95
	Vic, includes 8K	£125.95
	Vic, no extra RAM	£99.99
	The WORD (includes Video Pak 80, word processor, mail-merge, filing system) CBM 64 only	£224,25

THE ANATOMY OF THE 1541 DISK DRIVE



This 300+ page book is the most comprehensive guide available for the 1541 disk drive users who wish to gain a deep understanding of the operating system.

Contents include:-

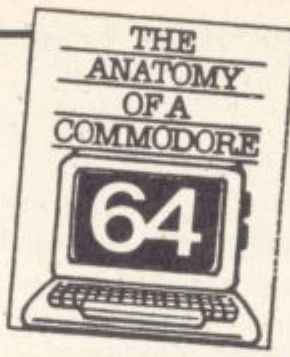
* Getting started
* Storing programs on disk
* Disk commands
* Sequential data storage
* Relative records
* Direct access commands
* DOS operation
* Diskette structure
* Utility programs
* ROM listing

Price £14.95

Many examples and utilities are included.

A major feature is the fully commented listings of the 1541 ROM.

THE ANATOMY OF THE COMMODORE 64



THE ANATOMY OF THE COMMODORE 64 is a 300 page book for the CBM-64 owner who wants to gain a better understanding of the lesser known features of the computer.

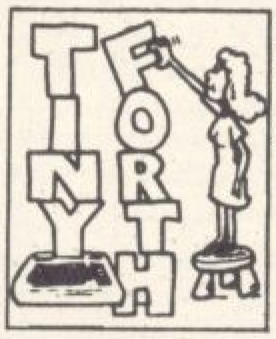
Contents include:-

* **Machine language programming on the CBM-64**
* **The next step – assembly language programming**
* **A close up look at the CBM-64**
* **Music synthesiser programs**
* **Graphics programming**
* **Basic from a different viewpoint**
* **Comparison of the Vic-20 and the Commodore 64**
* **Input and output control**

A major-feature of the book is complete and fully commented listing of the built in operating system – essential reading for all machine code programmers. **Price £14.95**

TINY FORTH

For the CBM-64 or Vic-20 (8K+), this package contains most of the language elements found in the fig-FORTH standard. Forth programs are usually faster and shorter than Basic, and the language can be extended by adding your own keywords. A 45 page manual is included.



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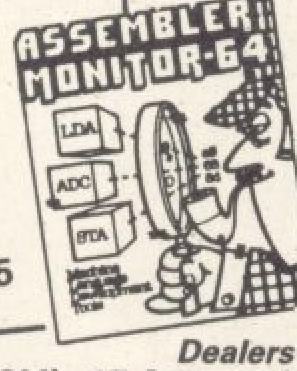
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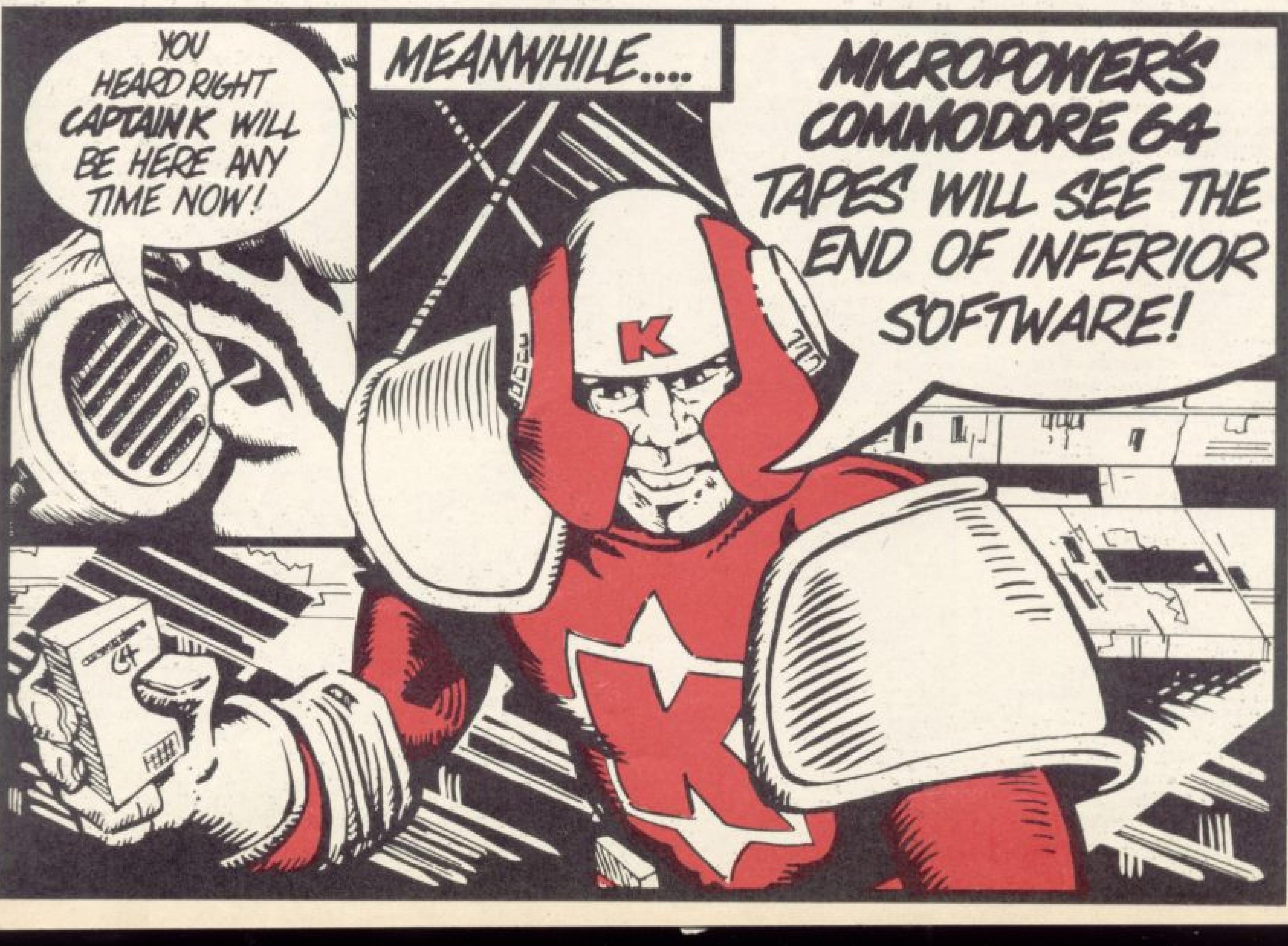
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Games

The 64 ought to be an excellent computer for games – and fortunately some suppliers are indeed taking advantage of that. Others aren't. Here's this month's crop of reviews.

How do we assess games? Basically we play them – which may sound obvious, except that all the reviewers have seen so many games that they can apply a bit of comparative experience to the evaluation.

We rate games out of five for each of four criteria. **Presentation** means how well the thing is packaged and how good it looks on the screen: dull graphics and poor sound get marked down here. **Skill level** refers to how much skill (of whatever kind) is required to play the game – so if pure chance is involved, the game gets a low mark. (But don't dismiss it on that: some 'chance' games are great fun.) **Interest** is an answer to how well the game did at maintaining the reviewer's interest in it. And **Value for Money** is obvious enough: it's our overall conclusion about how it compares with other games and whether we'd buy it ourselves.

SCREEN SCENE

GALAXY CONFLICT
Joystick or Keyboard
Price £14.75

If you are at the beginning of a long dull day and wondering how to kill it, this is one solution. Just working through the instructions to this strategy/board game could take you the best part of a morning.

Galaxy Conflict is one of those games where you start off making several decisions that you don't really understand, and end up an hour or two later living through the consequences of your blundering.

The aim is to rule the Galaxy which lies spread out before you on a large board. Unless you like playing by yourself with a "dummy" opponent, you'll need a partner. This is strictly a two-player game.

The computer's not an opponent, it delays the choices before you and computes the results of your decisions. It also keeps a real-time track of the resources being consumed from move to move. (Note that even doing nothing consumes energy, so declining a move becomes a positive act which could cost you plenty.)

There are four 'planetstations' for each player and each planetstation has four mineral moons. You start off with the planetstations having a fixed resource level (called P/J units). This level is increased in two ways, by the mineral moons at the rate of 100 P/J units per go, and by the 'P/J energy grid' (a device by which the computer inexplicably hands out additional chunks of P/J units).

To wage war, you have to build attack ships, called Eoncruisers. The catch is that it takes nearly the total resources of your planetstation to build one. And Eoncruisers seem to have a million moving parts, all of which wear out fast. There is also a crew of 1000, who starve inside five or six turns if you don't resupply them.

Your objectives are fairly clear: the cruiser's 'meson guns' (this game comes complete with its own vocabulary) are used to knock out either enemy moons or enemy eoncruisers. Destroying a mineral moon stops its flow of P/J units to an enemy planetstation and starts a war of attrition. Destroying enemy cruisers stops them doing the same to you.

But you have to balance attack with the ever-present need to maintain and repair your eoncruiser fleet, which you can only do by waiting until sufficient resources have built up on your planetstations.

The board is a 30x20 matrix of squares. You fire at a target by inputting its x-y coordinates and you move by inputting helm and 'velix-drive' settings.

It has the makings of a great game. But like every new, complicated board game, it will take time to build up a circle of devotees. And in the meantime, enthusiasts might have trouble finding partners. I thought one of the advantages of a computer in these solitary times was to get round this problem, not cause it. *TH*

Martech Games

Presentation:	■■■□□
Skill level:	■■■■□
Interest:	■■■■□
Value for money:	■■■■■



HEXAPAWN
Keyboard or Joystick
Price £5.95

This game of strategy is a neat piece of programming: but I doubt that it would hold the interest of the average punter. A 3x3 checker board is presented and each player (i.e. you and the computer) has three pawns on the back rows. The pieces move one square forward at a time but move diagonally to take opposing pieces, as in chess.

To win you must take all three of your opponent's pieces, block your opponent so that he cannot move, or advance one of your pieces to reach the opponent's back row. What makes the game interesting is that the computer has no strategy pre-programmed; instead it learns by remembering its mistakes. So the computer is easy to beat at first – but within ten games or so the 64 becomes invincible.

Clever as the programming is, it cannot compensate for no sound, mediocre graphics and only moderate interest potential. *WG/PR*

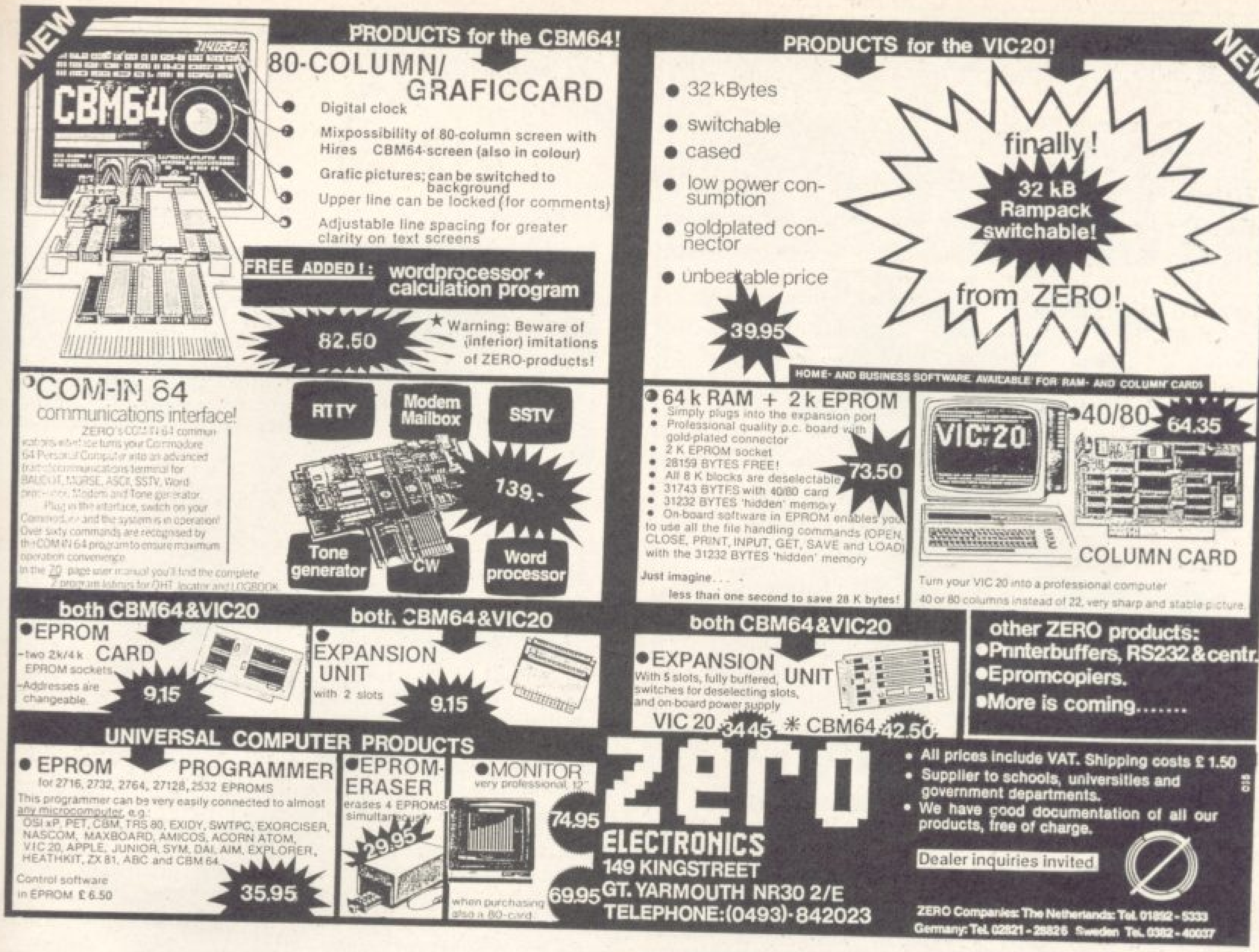
A.R. Software

Presentation:	■■□□□
Skill level:	■■■■□
Interest:	■□□□□
Value for money:	■□□□□

GOLF
Joystick or keyboard
Price £7.50

This is not a game to play in the odd half-hour. For starters the instructions and outline of the sport mus be loaded and read (20 pages), fol lowed by the game proper – cumulatively long process. Such i the handicap for a comple sophisticated program.

The user may choose how lon the course is to be; whether to hav an opponent; or whether to load a part-completed game. As th


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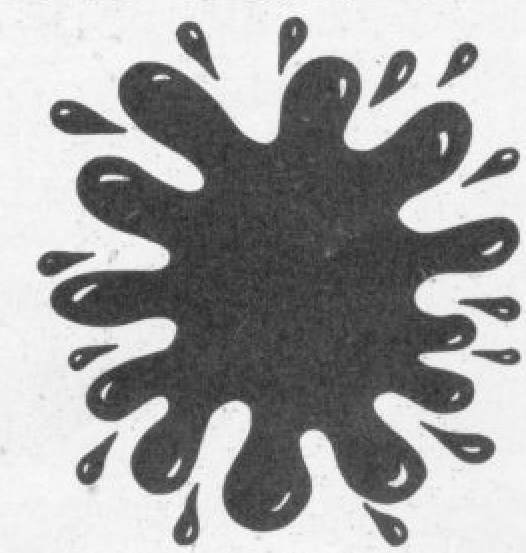

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program grades the handicap this should be retained and entered next time round. The computer generates each hole as needed along with the status readouts containing wind speed and direction, distance to green, etc. The player selects club, direction and force of shot from a graphic display.

Plan or 3D view of the course can be altered at will to monitor progress (the program also supplies its own comments on your performance!). The green is shown in close-up to facilitate putting. After each hole the score card is updated, with a new handicap allocated at the finish.

The only sound effects are a musical scale to indicate the trajectory of the ball whilst the graphics are naturally repetitive. A program to meander through – not therefore suitable for action afficionados, but great value. *LS*

Abrasco

Presentation:	■■■■■
Skill level:	■■■■□
Interest:	■■■■■
Value for money:	■■■■■

HEXPERT
Joystick only
Price £7.95

Doubtless you have noticed the ads for the various *Bert* games and considered them undemanding. Hopping from one hexagon to another, eventually to encompass the whole pyramid, seems simple enough – even with bouncing balls and a snake in pursuit.

The trouble is, there seems no spare time in which to formulate a viable strategy: the hunters are right after you and it always seems harder to make diagonal moves with a joystick. When you land on

SCREEN SCENE

a new ledge it changes colour until all the surfaces are yellow, then purple and finally green. Eventually, in the interests of science, I accomplished this feat; but I abandoned play when a geezer with specs joined the fray too. There are two spinning discs which afford escape routes but they must be used with care. In practice each advance in ability invites 'one more go'.

This game is in 3D but not spectacularly so. The sonics consist of basic sound effects. To put an end to my speculation, Anirog now advertise the incorporation of the Turbo quick-load system; faster than the 1541 disk drive. *LS*

Anirog

Presentation:	■■■■■
Skill level:	■■■■□
Interest:	■■■■□
Value for money:	■■■■□



KRYSTALS OF ZONG
Joystick only
Price £7.95

Add a fair sprinkling of Adventure Game seasoning to a MUNCHMAN scenario, and the result is *Krystals of Zong*. There is a matrix of nine rooms, interconnected in a logical manner, with a treasure chest in the centre of each. The rooms are colour-coded and only the appropr

ate hued key will gain you access to the riches.

To collect the keys, one to a room, you have to negotiate a maze avoiding snakes, bats, spiders and fireball-hurling mummies, according to the level of play. Swords are also randomly deposited in the chambers, allowing you to turn the tables on your pursuers; so are torches which you must acquire from time to time to keep your pursuers visible. Apart from bonus points some of the treasures endow you with special powers – like run-faster boots and an invisibility potion.

The action is of arcade standard. There is much hectic dashing from one room to the next, pursuers to avoid, objects to acquire, a stairway to find in order to reach the next level ... Good use of colour and melodies to signify the state of play add to the attraction of an unusual game. Full status readouts are given at all times. *LS*

P.S.S.

Presentation:	■■■■■
Skill level:	■■■■□
Interest:	■■■■□
Value for money:	■■■■□

JAMMIN'
Joystick or keyboard
Price £99.99

This came out at the same time as Taskset's excellent *Super Pipeline* and has been overshadowed by it as a consequence: I reckon it's the better game.

You have to manoeuver Rankin' Rodney through a moving maze to rescue four musical instruments. Sounds easy? Each instrument is in a different coloured area: and you can only jump on to the conveyor belt *if* the same colour is before you or you can get on to a four-colour square.

There are twenty different mazes to get through and each has its own quirks – you must avoid the dischords and skinheads who will take the instruments back, and you've only a short time to get them all. The music and graphics are superb (you do need a colour tv to play this one as several colours appear the same on a black and white set). Overall? Terrific! *DB*

Taskset

Presentation:	■■■■■
Skill level:	■■■■■
Interest:	■■■■■
Value for money:	■■■■■



MANIC MINER
Joystick or keyboard
Price £7.95

This brilliant game is one of the finest examples of what is now called a 'real-time graphic adventure', technical jargon for an animated game of manual dexterity with a good storyline.

Joystick or keys are used to negotiate Miner Willy through long-forgotten caverns in which he will have to jump up various levels, avoiding obstacles such as poisonous pansies, spiders, slime, and (worst of all) the Manic Mining Robot.

In each cavern Miner Willy has to collect a set of keys before he can proceed into the next cave. An incredible 20 different caverns are programmed, all with high resolution graphics in glorious technicolour and with tremendous animation. The start of the game will demonstrate all 20 levels, which is an entertainment in itself – our favourite is Attack of the Mutant Telephones! Finally, this addictive game is played to an excellent rendition of "In the Hall of the Mountain King". Highly recommended. *PR/WG*

Software Projects

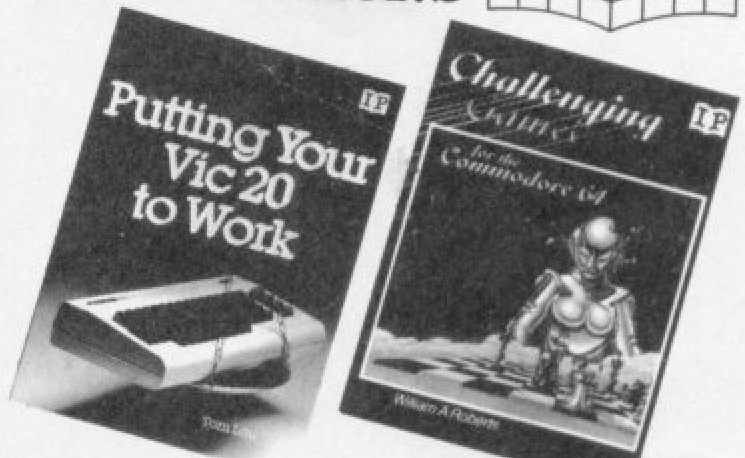
Presentation:	■■■■□
Skill level:	■■■□□
Interest:	■■■■□
Value for money:	■■■■■

MARATHON
One or two joysticks
Price £7.95

Marathon is a game of mental arithmetic that should prove educational for the 8-to-14 age group. It

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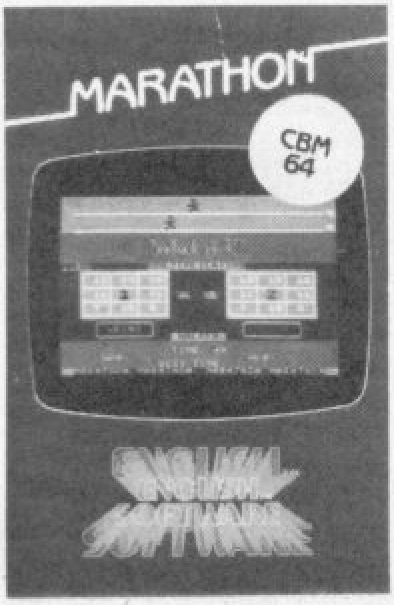
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SCREEN SCENE



can be played in pairs; alternatively one player competes for time against the computer.

The top of the screen depicts two marathon runners. Each time you answer a question correctly your man moves one step towards the winning post on the right. The centre of the screen shows two 3x3 grids, each grid square showing a possible answer. When a question flashes up, use the joystick to move the cursor on your grid to the square showing the correct answer: the first person to hit the fire button with the cursor in the right place wins, and his man moves towards the winning post.

Four skill levels (i.e. time allowed) can be selected and the type of questions can be varied between addition, subtraction, multiplication, and so on. This game might be simple; but it is very well presented, and holds a child's interest. A good example for this type of educational program. PR/WG

English Software

Presentation:	■■■□□
Skill level:	**depends on age of child**
Interest:	■■■■□
Value for money:	■■■■□

NEOCLYPSE
Joystick only
Price £7.95

First the bad news: it takes over 10 minutes to load (but at least it's faultless) and the screen is a trifle small. Now for the superb redeeming features.

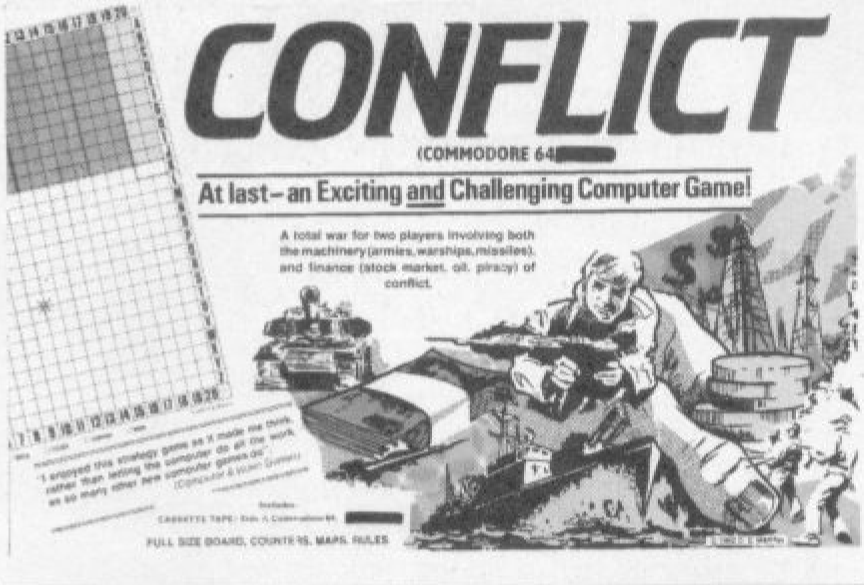
There are four different cityscapes, liberally peppered with futuristic architecture, gaudily painted by the 64's palette. It's in these graphically wonderous surroundings that you pilot your craft back and forth (*Defender* fashion) blasting various interceptors and laying waste to radar posts while avoiding the towering edifices and other installations. Score a hit and momentarily you possess the uncanny power of passing through solid matter, thus gaining access to every nook and cranny. Any of the four sectors can be accessed at the touch of a button, transporting you to fresh scenery and new targets. Status update screens appear with every change of sector. When you've rooted out the aliens in the towers and knocked their ships from the sky the swines reappear in greater strength, later to be aided by ground to air missiles. Shucks!

This is a far cry from the first computer program I ever bought – note especially the silky-smooth scrolling of the landscape.

Love it! LS

P.S.S.

Presentation:	■■■■■
Skill level:	■■■■□
Interest:	■■■■■
Value for money:	■■■■■



CONFLICT
Joystick or Keyboard
Price £14.75

Many of the comments made about *Galaxy Conflict* apply equally well to *Conflict*. Both are board-based strategy games in which you have to manage all the resources associated with making war. But there the similarity ends. Martech has managed to produce two games on the same principle that feel very different.

In *Conflict*, instead of having your resources automatically increased by the computer each round, you either have to trade, plunder or mine your cash. Armies can only be raised if you have the funds. This sounds like a morally healthy idea. If the game takes off it could teach a whole generation in a painless way that war costs too much.

The board is divided into rows and columns (from A to Z and from 1 to 20). More than half of it is sea. The rest is split into two territories. You can either play an 'endgame' where you try to invade the enemy city, or you can opt for more limited warfare and try to occupy the largest amount of territory after an agreed number of moves.

Revenue is raised through share dealing, through forays to capture neutral shipping and through prospecting for oil. The stock market values go up when the shares are bought and down when they are sold – the computer works out the relative changes in value. Oil can be found on a randomly located series of squares in each territory. Ships at sea are blown about according to the weather.

The game has enough variables affecting decision making to keep the most ardent empire-builder scratching his/her head well into the night. TH

Martech Games

Presentation:	■■■■□
Skill level:	■■■■□
Interest:	■■■■□
Value for money:	■■■■□

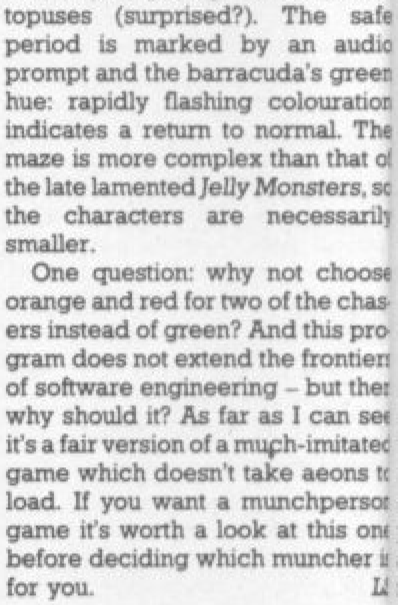
PAKACUDA
Joystick only
Price £5.99

This is *Pacman* as played by Neptune. Your joystick guides a barracuda around the sea bed gobbling up green fishes and avoiding octopuses (I haven't counted the legs). Your supercharging (sic) is of course obtained by courtesy of electric eels. Once swallowed they enable your protegé to eat the octopuses (surprised?). The safe period is marked by an audio prompt and the barracuda's green hue: rapidly flashing colouration indicates a return to normal. The maze is more complex than that of the late lamented *Jelly Monsters*, so the characters are necessarily smaller.

One question: why not choose orange and red for two of the chasers instead of green? And this program does not extend the frontiers of software engineering – but then why should it? As far as I can see it's a fair version of a much-imitated game which doesn't take aeons to load. If you want a munchperson game it's worth a look at this one before deciding which muncher is for you. LS

Rabbit Software

Presentation:	■■■■□
Skill level:	■■■■□
Interest:	■■■□□
Value for money:	■■■□□



OUTBACK 64
Joystick or keyboard
Price £7.50

It's good on the Vic, and it's fair di

kum on the 64 – Jason Benham has redesigned his highly novel game to include three screens of action plus music ranging from boogie to Beethoven.

Before the compulsive play starts, personal handicaps can be inserted on the menu page, then its all systems go. The Antipodean flavour is installed by baby kangaroos which you (boss roo) are protecting from the clutches of swagmen who first attempt to gate crash by the aid of balloons. These balloons are easy meat (on Level One!) for your arrows, which you release at different heights from a strategically-erected pulley system: bonus objects appear at the top – zip up and grab 'em – while the would-be abductors pelt you with apples and boomerangs (which naturally have different flight paths).

Screen Two, and the swagmen have put their trust in a helicopter and parachutes which you must despatch with your archery. They alight at different levels thus adding complications to the proceedings.

If you haven't assumed the garb of an angel too often, Screen Three presents itself: new problems to surmount. This time your adversaries are floating upwards in order to push a precariously-placed rock in your direction. Fast, accurate arrows are needed here, for each swagman missed ensures that the rock inches closer. As a picturesque surprise is promised after each third screen I must get some practice in!

This is very good, indeed excellent, implementation of an original idea. Plenty of animation to entertain, full of colour varying with each act and great sound effects. The scoring is exemplary with the best retained in a table. Deserves to be a bestseller as there is oodles of program for your money. *LS*

Paramount

Presentation:	■■■■■
Skill level:	■■■■□
Interest:	■■■■■
Value for money:	■■■■■

SHADOWFAX
Joystick or keyboard
Price £6.95

Using either a joystick or the keyboard you control the up and down movement of Shadowfax – a galloping white horse situated on the left of the screen.

Hordes of black horses gallop towards you which you must either dodge or shoot. To do the latter, you launch a thunderbolt and by releasing the fire button at the crucial time it will hopefully explode at one of the approaching mounts. As the game progresses it gets faster and faster, until inevitably you fail to dodge one of the black stallions – or the RSPCA catch up with you.

On the credit side, the animation of the galloping horse and the sound effects are very good – even on the Vic version. But the game is very unimaginative and has little to hold interest for long. The cassette has a CBM 64 version on one side and a version for the unexpanded Vic on the other. *PR/WG*

Postern

Presentation:	■■■□□
Skill level:	■■□□□
Interest:	■■□□□
Value for money:	■■□□□



STELLAR DODGER
Joystick or keyboard
Price £7.95

Terminal Software has produced a very good version of the *Lunar Rescue*-type arcade game. The scene depicts an orbiting mothership and a planet surface with three supply dumps. You control a space shuttle which on release from the mother ship has to be guided down to one of the supply dumps, negotiating a treacherous asteroid belt en route.

During the return phase in which the shuttle is thrust back to the mothership, you can blast away at the asteroids to chew a path through.

The colour and resolution of the graphics is pleasing to the eye and the control of the shuttle very smooth – requiring some skill and anticipation because of inbuilt inertia. There are seven levels of difficulty and several other useful features. All in all, good value for money. *PR/WG*



Terminal Software

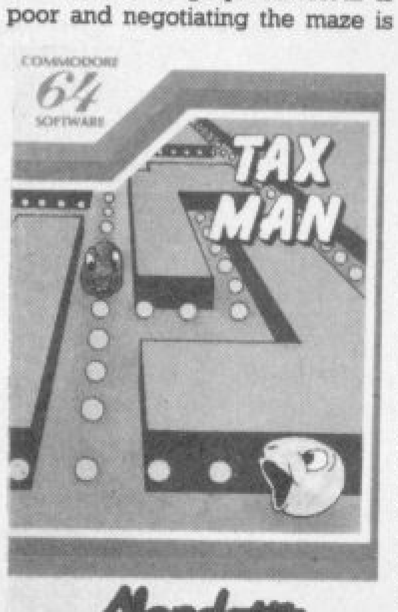
Presentation:	■■■■□
Skill level:	■■■□□
Interest:	■■■□□
Value for money:	■■■■□

TAXMAN
Joystick or keyboard
Price £00.00

Pacman must be one of the most-copied arcade games, and *Taxman* makes little attempt to conceal its pedigree. Your man dashes around the maze, gobbling up money dots whilst four 'taxmen' chase him, trying to make him bankrupt. If he eats a star then the taxmen bow their heads in shame, and for a few seconds, your man has a chance to eat them.

There are six levels of play with a different maze format for each.

This game has little to commend it – the use of graphics/colour is poor and negotiating the maze is slow and tedious. All in all a poor adaptation of what was once a brilliant arcade game. *PR/WG*



Mandata

Presentation:	■■■□□
Skill level:	■■□□□
Interest:	■■□□□
Value for money:	■■□□□



XERONS
Joystick or keyboard
Price £5.95

For 'Xerons' read 'Galaxians'. Apart from being a good implementation of a well-known theme, the matrix of colour, form and movement all lead to impressive screen displays.

Each time a galactic formation is annihilated a more complex armada replaces it, increasing the visual impact. Every stage is colour-coded; the early ones are fairly easy but not too many players will storm through latter screens.

The enemy ships come in three styles (my favourite being the multi-colour variants). All whirl, dive, drop bombs and generally convolute into the most awkward situations. A hit on the lone stalwart laser base generates a retina-rasping routine with the possible odd curse from the controller. The explosions sound good and beefy, indicating something solid has been hit.

The best advice I can give is to compare it with Anirog's *Galaxy*; then decide which is for you. *LS*

Supersoft

Presentation:	■■■■■
Skill level:	■■■□□
Interest:	■■■■□
Value for money:	■■■■□

UNICOPY: single-sided disk copying for the Commodore 64

by Jim Butterfield

Copying programs and sequential files can sometimes be difficult. There are backup programs available, of course; but they require you to copy the whole disk, and sometimes you just want to copy one or two programs. LOAD and SAVE work for simple Basic programs, but not for anything complex.

Well-equipped users have two disks, and can use utilities that will transfer from one to the other. But dual-disk units (notably the Commodore 4040) don't quite do the job. There's a light format difference between 4040 and 1541 that makes it undesirable to write on a disk formatted (NEWed) on the other unit. Thus, a 4040-copied disk is not well suited for the 1541 if you want to write further material to the disk.

UNICOPY will help to solve these problems. It will take your choice of programs or sequential files from the disk and hold them in memory. When you're finished, or when memory is full, you may now write the files to a new disk ... or to cassette tape!

As you scan the input disk, you'll be offered programs and sequential files for copying. You may tap the 'Y' or 'N' keys to signal yes, you want to copy this file; or no, you don't want this one. More on this in a moment.

Before presenting you with a file name, UNICOPY looks at the size of the file and the amount of memory space that is left. If the file is too big to fit, the program won't offer it to you: instead, it will signal '... MORE' and quit scanning the directory. That way you know there is more on the disk, but it can't be fitted in this time. UNICOPY could catch the missing files on a subsequent run.

The program will not skip by the big ones to look at smaller files later in the directory, since it might be important to you to keep a group of files in the same order as they were shown on the previous disk.

There's one exception to the 'abort on big files' rule. If the file won't fit into the whole memory buffer area, there's no chance of copying it with the program. UNICOPY will skip such jumbo files.

Buffering files

How big is the buffer area? It depends on how your Commodore 64 is configured. If it's a 'clean' system with no other resident programs, UNICOPY will throw out Basic (temporarily) and use all the memory it can get – about 48K, or the equivalent of 192 disk blocks.

On the other hand, a program in residence – monitor, DOS wedge, interface package or whatever – must not be disturbed. In this case UNICOPY will become conservate and restrict itself to less than 36K or 144 disk blocks. The exact amount of space will depend on the other program's location and size.

You'll be asked "Any resident programs?", at the start of UNICOPY; buffer size will be set accordingly.

One more thing: if you plan to direct the output to cassette tape, UNICOPY must ensure that no more than 28K or 112 blocks are used. There's a glitch in the tape routines that forbids writing a program from above address 32766; so UNICOPY will trim accordingly. By the way, this solves a subtle problem with cassette tape: normally, you can never save memory above hex $7FFE because of this glitch; but UNICOPY will move the program down and save it successfully from where it is held in lower memory.

Initial tasks and first questions

If you're copying another disk, be sure that the destination disk is formatted before running UNICOPY. The disk may already be formatted if you're just adding some new files; but if not, remember to NEW it, since UNICOPY won't do the job for you. You may copy files to more than one disk; format them all as necessary.

We've already mentioned "ANY RESIDENT PROGRAMS?"; answer Y or N.

"OUTPUT TO TAPE OR DISK?" calls for touching the T or D key. If you select Tape, you'll be asked "WRITE END-OF-TAPE MARK?" If you respond with N, you'll copy the programs to tape and that's all.

If you answer Y, you'll copy the programs to tape and then write a special block called a tape mark. Here's what the tape mark does: at some later time, if you're searching through this tape for a particular file, the tape mark will stop the search. So if you don't find the file you want on tape, you won't go running through the whole tape – most of which will be blank. An unsuccessful search will terminate early, thanks to the tape mark.

"DISK INPUT PATTERN?" allows you to use pattern-matching. You're prompted with the asterisk: if you want to see everything, just press RETURN. But there are many other combinations. "AR*" will present you only with programs that begin with AR, such as AR, ARCHER, ARM or ARRRGH. "R?D?" will present you with such names as REDS, RIDE, or R2D2 but not RIDDLE. "*=P" will offer programs only. And "PLUTO" will offer you only a file called PLUTO.

When you are presented with names from the directory, you may type Y or N to accept or reject the files for copying. If you know that you want to take or reject a sequence of files, you may hold down the appropriate key. The RETURN keys acts to 'lock in' the previous key, so that pressing Y, RETURN will accept and N, RETURN will reject everything.

The output

Eventually the questionnaire will stop, and the computer will advise "READING FILES". The programs or sequential files will be brought into the buffer area. The programs won't be in their usual place in memory, but that doesn't matter; we just want to copy them, not to run them.

After the files are loaded, the computer will say "READY TO WRITE FILES; PRESS ANY KEY". *Don't* press that key yet.

If you're writing to cassette, place the tape in the drive. If you have time and think it's necessary, fast-forward and rewind the tape to even up the tension. Finally, press PLAY and RECORD and touch any key on the keyboard. The tape will start to write: the screen will go blank, of course.

If you're writing to another disk, take the 'origin' disk out of the drive and put the destination disk in there. (You did make sure that the destination disk was pre-formatted, didn't you?) Now touch any key on the keyboard. As the files write to the disk, you'll see their names displayed.

If any errors are encountered during input or output you'll be told about them.

When the copying job is done, you'll be asked "ANOTHER OUTPUT?". If you want to write to another tape or disk, put it into the drive and press Y for 'yes'. Otherwise, press N and the job is done.

(Note that UNICOPY does not attempt to copy USR or REL type files, nor does it try to copy 'direct' data. This type of job should be done by the programs which use these types of files.)

The generator

The listing given here is *not* program UNICOPY64. It is a generator program that will write program UNICOPY64 for you. The DATA statements will be checked carefully for accuracy before program UNICOPY is created for you; you'll be told of any errors.

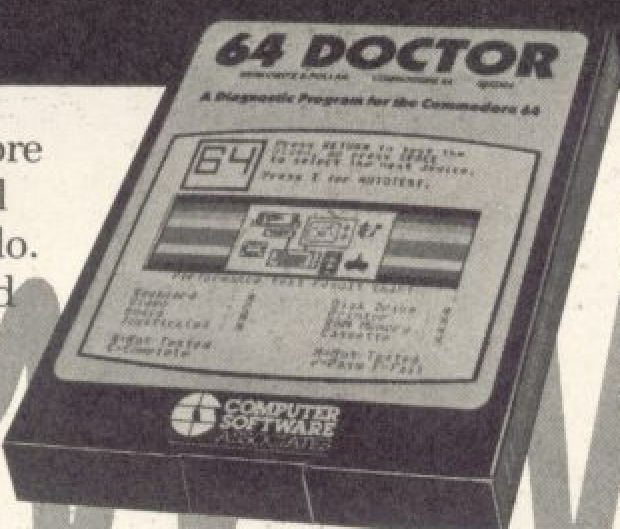
Type in the program. Take special care with lines 200 to 320, and don't miss the semicolon at the end of line 300! When the program is complete, place a disk into your disk drive (UNICOPY64 will be written on to it) and type RUN.

It will take the generator over a minute to check the accuracy of your DATA statements. If there are any errors, you'll be told about them (the line number will be given) and UNICOPY64 will not be written.

If there are no errors in the DATA statements, program UNICOPY64 will be written to disk and be ready to LOAD and use.

(Program UNICOPY 4.0 and UNICOPY64 are already in the TPUG library and thus are public domain).

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```
1 DATA 1,8,11,8,100,0,158,50,48,54,51,0,-45
2 DATA 0,0,53,0,160,255,140,34,15,169,89,141,-5
3 DATA 33,15,169,0,141,37,15,141,39,15,169,13,-39
4 DATA 32,210,255,200,185,186,13,208,247,165,55,141,-50
5 DATA 43,15,165,56,141,44,15,32,207,255,201,78,-44
6 DATA 208,13,169,0,141,43,15,169,208,141,44,15,-35
7 DATA 141,39,15,32,115,13,201,68,240,15,162,0,-13
8 DATA 142,39,15,169,127,205,44,15,176,3,141,44,-55
9 DATA 15,169,122,133,141,169,15,133,142,24,173,44,-44
10 DATA 15,229,142,141,35,15,169,15,162,8,160,111,-23
11 DATA 32,186,255,169,0,162,49,160,15,32,189,255,-34
12 DATA 32,192,255,160,255,169,13,32,210,255,200,185,-13
13 DATA 51,14,208,247,160,0,185,75,14,153,49,15,-35
14 DATA 200,192,3,208,245,32,207,255,201,13,240,6,-49
15 DATA 153,49,15,200,208,243,140,30,15,160,255,169,-41
16 DATA 13,32,210,255,200,185,232,14,208,247,169,1,-11
17 DATA 162,8,160,96,32,186,255,173,30,15,162,49,-50
18 DATA 160,15,32,189,255,32,192,255,169,13,32,210,-29
19 DATA 255,162,1,32,198,255,32,228,255,32,228,255,-47
20 DATA 32,228,255,141,31,15,32,228,255,13,31,15,-9
21 DATA 240,122,169,0,141,32,15,141,41,15,32,228,-36
22 DATA 255,141,38,15,32,228,255,240,3,238,41,15,-34
23 DATA 173,38,15,240,17,56,173,35,15,237,38,15,-4
24 DATA 176,3,238,41,15,32,210,9,240,198,32,228,-29
25 DATA 255,170,208,250,173,32,15,201,83,240,16,201,-4
26 DATA 80,208,181,173,41,15,240,7,173,37,15,240,-17
27 DATA 171,208,36,140,36,15,160,2,185,50,15,32,-26
28 DATA 210,255,200,204,36,15,144,244,169,13,32,210,-27
29 DATA 255,32,204,255,32,63,10,162,1,32,198,255,-25
30 DATA 76,227,8,160,255,169,32,32,210,255,200,185,-44
31 DATA 15,15,208,247,32,204,255,169,1,32,195,255,-54
32 DPTA 160,255,169,13,174,37,15,208,11,32,210,255,-4
33 DATA 200,185,78,14,208,247,240,69,32,210,255,200,-56
34 DATA 185,95,14,208,247,32,234,10,32,86,13,173,-64
35 DATA 39,15,240,4,169,54,133,1,32,176,11,32,-64
36 DATA 204,255,173,39,15,240,4,169,55,133,1,160,-45
37 DATA 255,169,13,32,210,255,200,185,213,14,208,247,-53
38 DATA 32,228,255,170,208,250,32,228,255,201,89,240,-1
39 DATA 203,201,78,208,245,169,15,32,195,255,96,160,-9
40 DATA 20,169,160,153,51,15,136,208,250,32,228,255,-54
41 DATA 170,240,55,201,34,208,246,160,2,32,228,255,-43
42 DATA 201,34,240,9,153,50,15,200,170,208,242,240,-19
43 DATA 33,32,228,255,170,240,27,201,32,208,246,32,-2
44 DATA 228,255,170,240,17,201,32,240,246,141,32,15,-62
45 DATA 153,51,15,169,44,153,50,15,200,200,96,56,-42
46 DATA 173,35,15,237,38,15,141,35,15,238,37,15,-3
47 DATA 160,17,185,52,15,145,141,136,16,248,24,165,-12
48 DATA 141,105,22,133,141,165,142,105,0,133,142,96,-40
49 DATA 160,0,162,0,202,208,253,136,208,248,165,203,-35
50 DATA 45,34,15,141,31,15,32,228,255,201,89,240,-27
51 DATA 17,201,78,240,13,201,13,240,15,173,31,15,-19
52 DATA 201,64,240,226,208,11,141,33,15,169,255,44,-26
53 DATA 169,0,141,34,15,173,33,15,201,78,240,5,-42
54 DATA 32,26,10,144,3,32,192,10,96,162,15,32,-9
55 DATA 198,255,160,0,32,228,255,153,72,15,200,201,-47
56 DATA 13,240,8,192,49,176,4,165,144,240,237,32,-55
57 DATA 204,255,169,13,153,72,15,173,72,15,201,49,-37
58 DATA 144,18,238,42,15,160,0,185,72,15,201,13,-32
59 DATA 240,6,32,210,255,200,208,243,96,169,145,32,-38
60 DATA 210,255,169,32,162,25,32,210,255,202,208,250,-3
61 DATA 169,145,32,210,255,169,13,76,210,255,230,141,-1
62 DATA 208,2,230,142,165,141,205,43,15,165,142,237,-54
63 DATA 44,15,96,169,122,133,139,169,15,133,140,165,-26
64 DATA 141,141,45,15,165,142,141,46,15,160 18,140,-50
65 DATA 36,15,136,177,139,153,52,15,201,160,208,3,-9
66 DATA 140,36,15,136,16,241,238,36,15,238,36,15,-29
67 DATA 160,18,165,141,145,139,200,165,142,145,139,160,-1
68 DATA 0,140,42,15,185,50,15,32,210,255,200,204,-49
69 DATA 36,15,144,244,169,32,32,210,255,169,2,162,-62
70 DATA 8,160,98,32,186,255,173,36,15,162,50,160,-36
71 DATA 15,32,189,255,32,192,255,32,132,10,176,37,-63
72 DATA 162,2,32,198,255,32,228,255,160,0,145,141,-51
73 DATA 32,217,10,176,20,166,144,240,240,32,132,10,-33
74 DATA 176,11,160,20,165,141,145,139,200,165,142,208,-31
75 DATA 4,160,21,169,0,145,139,24,165,139,105,22,-21
76 DATA 133,139,165,140,105,0,133,140,32,204,255,169,-52
77 DATA 2,32,195,255,169,13,32,210,255,173,42,15,-53
78 DATA 208,3,32,192,10,165,139,205,45,15,165,140,-58
79 DATA 237,46,15,176,3,76,252,10,96,169,122,133,-25
80 DATA 139,169,15,133,140,173,40,15,201,68,208,23,-15
81 DATA 162,15,32,201,255,169,73,32,210,255,169,48,-17
82 DATA 32,210,255,169,13,32,210,255,32,204,255,160,-38
83 DATA 18,140,36,15,136,177,139,153,52,15,201,160,-28
84 DATA 208,3,140,36,15,136,16,241,172,36,15,136,-7
85 DATA 185,52,15,141,32,15,172,36,15,169,44,153,-9
86 DATA 52,15,200,169,87,153,52,15,200,200,200,140,-22
87 DATA 36,15,160,18,177,139,133,141,200,177,139,133,-40
88 DATA 142,200,177,139,141,43,15,200,177,139,240,65,-27
89 DATA 141,44,15,160,0,173,40,15,201,68,240,21,-12
90 DATA 185,52,15,153,50,15,200,204,36,15,144,244,-14
91 DATA 56,173,36,15,233,6,141,36,15,160,0,140,-41
92 DATA 42,15,185,50,15,32,210,255,200,204,36,15,-38
93 DATA 144,244,169,32,32,210,255,173,40,15,201,68,-3
94 DATA 240,6,32,208,12,76,154,12,169,2,162,8,-20
95 DATA 160,98,32,186,255,173,36,15,162,50,160,15,-54
96 DATA 32,189,255,32,192,255,32,132,10,176,23,162,-23
97 DATA 2,32,201,255,160,0,177,141,32,210,255,32,-33
98 DATA 217,10,144,246,32,204,255,32,132,10,169,2,-4
99 DATA 32,195,255,169,13,32,210,255,173,42,15,208,-27
100 DATA 3,32,192,10,24,165,139,105,22,133,139,165,-58
101 DATA 140,105,0,133,140,165,139,205,45,15,165,140,-62
102 DATA 237,46,15,176,3,76,214,11,173,40,15,201,-22
103 DATA 84,208,5,169,5,32,106,247,96,169,2,162,-17
104 DATA 1,160,1,32,186,255,173,36,15,162,50,160,-10
105 DATA 15,32,189,255,173,32,15,201,83,208,29,32,-52
106 DATA 192,255,162,2,32,201,255,160,0,177,141,32,-38
107 DATA 210,255,32,217,10,144,246,32,204,255,169,2,-60
108 DATA 32,195,255,96,32,56,248,160,1,177,141,153,-41
109 DATA 193,0,136,16,248,32,217,10,32,217,10,56,-13
110 DATA 173,43,15,229,141,141,47,15,173,44,15,229,-14
111 DATA 142,141,48,15,24,165,193,109,47,15,133,174,-18
112 DATA 165,194,109,48,15,133,175,169,1,170,32,106,-38
113 DATA 247,165,141,133,193,165,142,133,194,173,43,15,-28
114 DATA 133,174,173,44,15,133,175,32,103,248,96,160,-27
115 DATA 255,169,13,32,210,255,200,185,112,14,208,247,-10
116 DATA 32,228,255,168,208,250,32,228,255,168,240,250,-55
117 DATA 32,192,10,96,160,255,169,13,32,210,255,200,-12
118 DATA 185,159,14,208,247,32,228,255,168,208,250,32,-9
119 DATA 228,255,201,84,240,4,201,68,208,245,32,210,-50
120 DATA 255,141,40,15,201,68,240,30,160,255,169,13,-8
121 DATA 32,210,255,200,185,186,14,208,247,32,228,255,-30
122 DATA 201,89,240,7,201,78,208,245,238,40,15,32,-63
123 DATA 210,255,96,147,13,13,85,78,73,67,79,80,-6
124 DATA 89,32,32,86,49,46,49,32,32,74,73,77,-26
125 DATA 32,66,85,84,84,69,82,70,73,69,76,68,-14
126 DATA 13,13,70,79,82,77,65,84,32,79,85,84,-62
127 DATA 80,85,84,32,68,73,83,75,83,32,73,78,-58
128 DATA 32,65,68,86,65,78,67,69,13,13,65,78,-54
129 DATA 89,32,82,69,83,73,68,69,78,84,32,80,-33
130 DATA 82,79,71,82,65,77,83,32,46,46,46,46,-30
131 DATA 13,40,87,69,68,71,69,44,32,77,79,78,-15
132 DATA 73,84,79,82,44,32,76,73,78,75,41,63,-7
133 DATA 32,78,157,0,13,68,73,83,75,32,73,78,-56
134 DATA 80,85,84,32,80,65,84,84,69,82,78,63,-47
135 DATA 32,42,157,0,36,48,58,13,42,42,32,78,-48
136 DATA 79,32,70,73,76,69,83,32,42,42,13,0,-52
137 DATA 32,82,69,65,68,73,78,71,32,70,73,76,-3
138 DATA 69,83,58,13,0,42,42,32,82,69,65,68,-60
139 DATA 89,32,84,79,32,87,82,73,84,69,32,70,-51
140 DATA 73,76,69,83,32,42,42,13,32,32,32,32,-39
141 DATA 32,80,82,69,83,83,32,65,78,89,32,75,-2
142 DATA 69,89,13,0,79,85,84,80,85,84,32,84,-47
143 DATA 79,32,84,65,80,69,32,79,82,32,68,73,-41
144 DATA 83,75,63,32,42,157,0,87,82,73,84,69,-58
145 DATA 32,69,78,68,45,79,70,45,84,65,80,69,-34
146 DATA 32,77,65,82,75,63,32,42,157,0,32,65,-3
147 DATA 78,79,84,72,69,82,32,79,85,84,80,85,-49
148 DATA 84,63,32,13,0,72,79,76,68,32,68,79,-37
149 DATA 87,78,32,39,89,39,32,79,82,32,39,78,-4
150 DATA 39,32,84,79,32,83,69,76,69,67,84,32,-7
151 DATA 70,73,76,69,83,13,13,0,32,32,32,32,-17
152 DATA 32,46,46,46,32,77,79,82,69,13,0,-31
200 DATA  153
210 M=63:T=63
220 READ X:L=PEEK(M):H=L=200:IF H THEN L=X
230 V=R<>L:S=(T<>63 AND V)
240 IF V THEN T=L:IF NOT S THEN R=R+1:S=R<>L
250 T=(T*3+X)AND 63
260 IF S THEN PRINT "ERROR LINE";R:E=-1
270 R=L:IF NOT H GOTO 220
280 IF E THEN STOP
290 X=-1:RESTORE:OPEN 1,8,3,"0:UNICOPY64,P,W"
300 IF X>=0 THEN PRINT#1,CHR$(X);
310 READ X:L=PEEK(M):IF L<200 GOTO 300
320 CLOSE 1

READY.
```

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Albert's Assessment Aid: financial aid program

By Albert van Aardt

If you save twenty quid a month for ten years, how much money will you have? If you increase your mortgage repayment by £30, how much sooner will the house be paid off? What's it worth to give up smoking and/or Cokes? This little program will tell you.

There are three main areas of calculations it will help you with: loan repayment, saving one lump sum, and saving on a regular basis. In each area you can calculate any of the variables – for instance the time needed to pay a loan.

I was too bone lazy to use the proper terminology, so a 'premium' means any payment you make, be it to pay off a loan or to save money. Similarly, 'capital' means the money at the end of a savings term, or the amount you're paying off. If you'll excuse those little errors, you'll find this program very nice to use.

Just a few notes on the structure – **lines 5-80** are the main menu; **lines 100-199** calculate loan repayments; **lines 200-299** calculate savings on a lump sum (also called a 'premium'); **lines 300-399** calculate savings on monthly payments. **lines 600-900** are input routines.

No special Commodore Basic commands are used, so this program will work on Vic and 64 – and could very easily be adapted for use on other micros.

```
5 CLR
10 PRINT"▓▓▓▓▓▓▓▓▓FINANCE PROGRAM."
11 PRINT"▓▓▓▓▓-------------------"
15 PRINT"1. LOAN REPAYMENT"
20 PRINT"2. SAVE ONE AMOUNT"
30 PRINT"3. SAVE PER PREMIUM"
35 PRINT"9. END"
40 INPUT A$:A=VAL(A$)
50 ON A GOTO 100,200,300
80 END
100 PRINT"▓▓▓▓  LOAN REPAYMENT"
101 CLR
105 PRINT"  ---------------"
110 PRINT"1. PREMIUM CALCULATION"
120 PRINT"2. TIME CALCULATION"
130 PRINT"3. CAPITAL CALCULATION"
140 INPUT A$:A=VAL(A$)
150 ON A GOTO 160,170,180,100
155 GOTO 10
160 GOSUB 600:GOSUB 700:GOSUB 800
162 PRINT"PREMIUM =";(K*R/(1-(1+R)↑-M))
165 GOTO 197
170 GOSUB 600:GOSUB 700:GOSUB 900
172 M=INT(LOG((R*K)/P))/(LOG(1+R))
173 M=(-1)*M
174 J=INT(M/12):T=INT(M-12*J)
176 PRINT J;" YEAR ";T;"MONTHS"
178 GOTO 197
180 GOSUB 700:GOSUB 800:GOSUB 900
182 K=INT(P*(1-(1+R)↑-M)/R)
184 PRINT" CAPITAL =";K
186 GOTO 197
197 INPUT"AGAIN (Y/N)";A$
198 IF A$="Y" THEN 100
199 GOTO 10
200 PRINT"▓▓▓▓▓  SAVE ONE AMOUNT"
201 CLR
205 PRINT"  ---------------"
210 PRINT"1. CAPITAL CALCULATION"
220 PRINT"2. PREMIUM CALCULATION"
230 PRINT"3. INTEREST CALCULATION"
232 PRINT"4. TIME CALCULATION"
234 PRINT"5. VALUE CALCULATION"
235 INPUT A$:A=VAL(A$)
240 ON A GOTO 250,260,270,280,290,200
245 GOTO 10
250 GOSUB 700:GOSUB 800:GOSUB 900
255 PRINT"CAPITAL =";P*(1+R)↑M
259 GOTO 297
260 GOSUB 600:GOSUB 700:GOSUB 800
265 PRINT"PREMIUM =";K/(1+R)↑M
269 GOTO 297
270 GOSUB 600:GOSUB 800:GOSUB 900
275 PRINT"INTEREST =";(((K/P)↑(1/M))-1)*1200
279 GOTO 297
280 GOSUB 600:GOSUB 700:GOSUB 900
283 M=(LOG(K/P))/(LOG(1+R))
284 Y=INT(M/12):X=Y*12:Z=INT((X-M)*-1)
285 PRINT Y;" YEARS ";Z;" MONTHS"
289 GOTO 297
290 GOSUB 600:GOSUB 700:GOSUB 800
295 PRINT"VALUE =";K*((1+I)↑M)
297 INPUT"AGAIN (Y/N)";A$
298 IF A$="Y" THEN 200
299 GOTO 10
300 PRINT"▓▓▓  SAVE BY MONTHLY PREMIUM"
302 CLR
305 PRINT"  -----------------------"
310 PRINT"1. PREMIUM CALCULATION"
320 PRINT"2. TIME CALCULATION"
330 PRINT"3. CAPITAL CALCULATION"
333 PRINT"4. VALUE CALCULATION"
335 INPUT A$:A=VAL(A$)
340 ON A GOTO 350,360,370,380,300
345 GOTO 10
349 IF A > 4 THEN 300
350 GOSUB 600: GOSUB 700:GOSUB 800
355 PRINT "PREMIUM";(K*R)/(((1+R)↑M)-1)
359 GOTO 397
360 GOSUB 600: GOSUB 700:GOSUB 900
362 M=(LOG(((K*R)/P)+1))/(LOG(1+R))
363 Y=INT(M/12):X=Y*12:Z=INT((X-M)*-1)
364 PRINT Y;" YEARS ";Z;" MONTHS"
369 GOTO 397
370 GOSUB 900: GOSUB 700:GOSUB 800
372 PRINT "CAPITAL =";P*((((1+R)↑M)-1)/R)
379 GOTO 397
380 GOSUB 600: GOSUB 700:GOSUB 800
382 I=R*12:N=(-1*(M/12))
384 PRINT"VALUE =";K*((1-(1+I)↑N)/I)
389 GOTO 397
397 INPUT"AGAIN (Y/N)";A$
398 IF A$="Y" THEN 300
399 GOTO 10
600 INPUT"CAPITAL ";K:RETURN
700 INPUT"INTERST RATE PER YEAR ";I:R=I/100/12:RETURN
800 INPUT"TIME IN YEARS";J:M=J*12:RETURN
900 INPUT"PREMIUM ";P:RETURN

READY.
```

SECURE A tape protection system

by Fred Reid

This handy little number should make any Basic program on the 64 uncopyable.

To save a program with this system, first LOAD "SECURE" (it will run automatically) and then load in your master program. The system will work with any Basic program, providing it is fully watertight.

Now we'll tidy up your program, ready to SAVE it in the protected format. For a start, if your program doesn't disable the RUN/STOP key a POKE 808,251 inserted near the start will take care of that.

To prevent access to your program in case of an error occurring, POKE 768,226: POKE 769,252 will cold-start the machine if an error occurs.

It is a good idea at this point to remove all unwanted spaces and REMs (if you haven't already done so). This will reduce loading time and make your program run faster.

Now, we are ready to SAVE. Insert a blank tape and type SYS(49152)"filename": SAVE:END. The prompt should appear ("PRESS RECORD & PLAY" etc). When the tape stops, the operation is complete.

You can now load in another program for protecting in the same way.

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```
0 FORI=0TO278:READA:POKEI+49152,A:NEXTI
1 DATA165,43,141,23,193,165,44
2 DATA141,24,193,169,165,133,43
3 DATA141,2,3,169,2,133,44
4 DATA141,3,3,165,45,141,25
5 DATA193,165,46,141,26,193,169
6 DATA3,133,46,169,4,133,45
7 DATA162,86,189,192,192,157,165
8 DATA2,202,16,247,169,8,133
9 DATA252,169,0,133,251,160,1
10 DATA177,251,73,255,145,251,200
11 DATA208,247,230,252,165,252,201
12 DATA160,208,239,32,212,225,169
13 DATA3,133,185,32,89,225,173
14 DATA23,193,133,43,173,24,193
15 DATA133,44,173,25,193,133,45
16 DATA173,26,193,133,46,169,135
17 DATA141,50,3,169,192,141,51
18 DATA3,169,131,141,2,3,169
19 DATA164,141,3,3,169,0,133
20 DATA157,96,169,237,141,50,3
21 DATA169,245,141,51,3,169,1
22 DATA170,168,32,186,255,169,1
23 DATA162,121,160,192,32,189,255
24 DATA32,89,225,169,0,133,251
25 DATA169,8,133,252,160,1,177
26 DATA251,73,255,145,251,200,208
27 DATA247,230,252,165,252,201,160
28 DATA208,239,96,169,131,141,2
29 DATA3,169,164,141,3,3,169
30 DATA0,133,157,32,213,255,169
31 DATA1,170,168,32,186,255,169
32 DATA1,162,166,160,2,32,189
33 DATA255,169,0,32,213,255,134
34 DATA45,134,47,134,49,132,46
35 DATA132,48,132,50,160,0,132
36 DATA251,169,8,133,252,200,169
37 DATA255,81,251,145,251,200,208
38 DATA247,230,252,165,252,201,160
39 DATA208,239,169,0,32,94,166
40 DATA32,142,166,76,174,167

READY.
```


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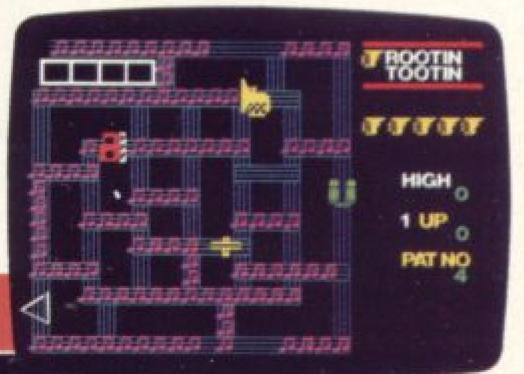
....

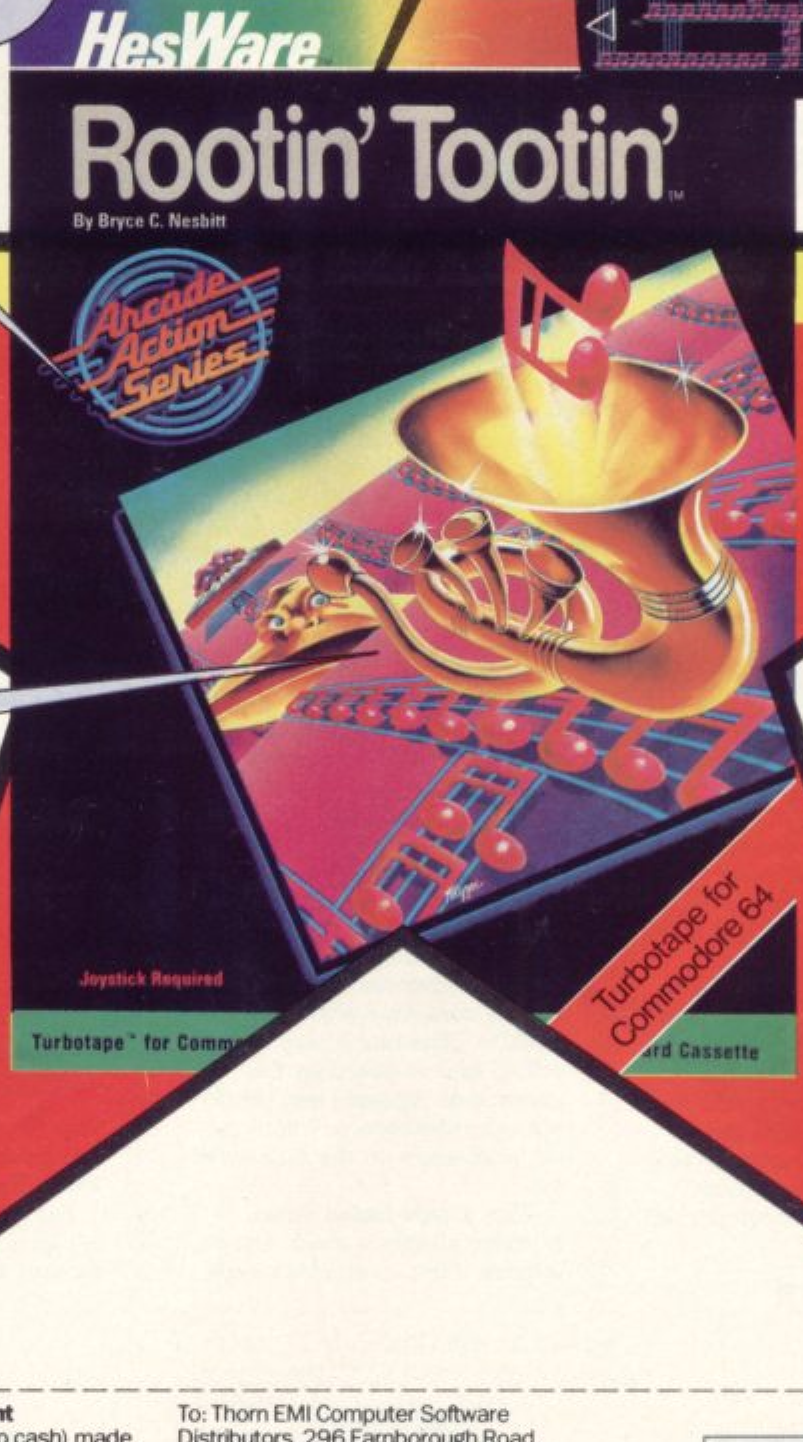
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The Forth Page

one book, one tape

by Richard Hunt

This time our regular reflection of the Forth programming language takes in two curate's egg introductions to the subject – an introductory book by the prolific Owen Bishop, and an interesting attempt by Romik to put the FIG-Forth standard on to tape for the 64.

Romik has produced for the 64 an implementation of FIG-Forth (initially on tape, but a disk version is to follow).

The package comes with a pocket-sized manual, and as with the VIC-Forth by Datatronic it is disappointingly small. It consists of a descriptive list of implemented words, a two-block example application, a general memory map and a list of error messages. Some of the word descriptions are laconic in their brevity; and in the version I received for review there were two discrepancies present between the source code to be entered for the demonstration application and its alleged listed output.

Having said this, FIG-Forth is pretty well documented elsewhere; excellent textbooks are available, and indeed a couple of these are recommended by Romik.

Screen

The implementation loads from tape in three minutes and displays a sign-on message. The memory map indicates that some 8K is used for the Forth operating system from $0000 to $2000. Immediately above this is the editor vocabulary which thankfully is resident without further ado. To my mind the first thing to do is to change the screen colour to something other than the eye-boggling atomic blue. This is easily accomplished by entering ...

```
n 53281 c! n 53280 c!
```

... for background and border colours respectively (where *n* is a number between 0 and 15).

On a more permanent basis it may be useful to define words such as ...

```
: background 53281 c!; (n1 ---)
: sborder 53280 c!; (n1 ---)
: colour background sborder;
(n1 n2 ---)
```

I find > 9 8 colour < produces a restful and clear picture.

Next I set about entering the demonstration blocks. At this point I'd recommend the inexperienced Forth user to refer to a reference book such as Winfield's *Complete Forth* on how to use the editor vocabulary. Essentially you need to prepare the input buffers for data entry, select one of the two available buffers, call up the editor as current vocabulary and [put] the code on the appropriate lines – all standard editing procedure.

Once an editing screen is filled it must be marked as updated and saved in whatever medium is available for virtual memory. Normally this would be the disk – easy to use for quick and painless data storage because each block is identified by its block number and loaded by a simple command e.g. > 10 LOAD<. The block may then be edited and re-saved by the commands [update] and [flush] without reference to where the physical entry on the disk may be.

With a tape-based virtual memory all this is much more difficult. First, each block must be entered correctly and [flush]ed to tape storage in sequence. *It is vital to note the cassette counter numbers each time the cassette is started and stopped*: a gap should be left between blocks so as to avoid over-writing problems.

Make use also of the word [empty-buffers] before entering anything to a block so that you may be sure of its contents. Do the same before listing or loading from tape.

Picking nits

The cassette acts as a counterpart in every operation to a disk unit – but also without the disk unit's all-important speed and flexibility of access. My experience is that it is very easy to lose patience with the cassette simply because data cannot be accessed on a random basis.

Back to the demonstration. This should be entered exactly as instructed bearing in mind the caveats above. My copy of the manual contained two errors. Just in case, Block 11 line 3 should read after listing ...

```
3 p over 2 * over ;
```

And line 11 should be ...

```
11 p reverse 13 0 do 1 colour
+!
```

This displays pretty bar patterns and colours until the RUN/STOP key is depressed.

For my Vic Forth implementations I have defined a number of useful words that extend stack manipulation, logical operators and the like. Most worked, except those that referenced memory locations with specific system functions. (Not being too familiar with the 64 I have not changed them, as the machine was on loan to me for only a short time.)

Otherwise Romik Forth works much as expected. I should add that I am not that proficient with Forth to worry about what words have or have not been pre-defined: one of my repeated points is that if it is not there, do it youself.

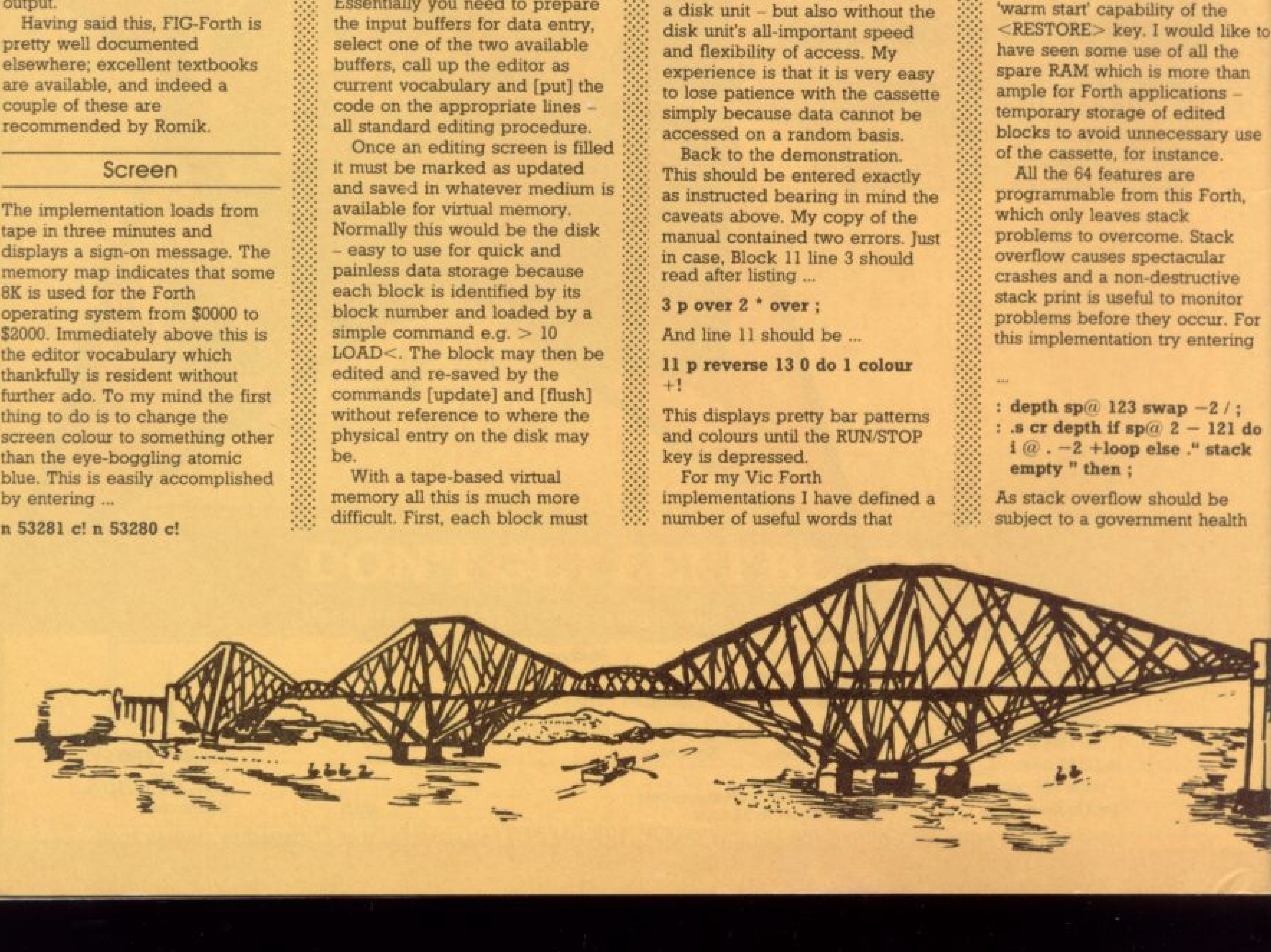
The package is not too difficult to use and is reasonably good for beginners who will like the 'warm start' capability of the <RESTORE> key. I would like to have seen some use of all the spare RAM which is more than ample for Forth applications – temporary storage of edited blocks to avoid unnecessary use of the cassette, for instance.

All the 64 features are programmable from this Forth, which only leaves stack problems to overcome. Stack overflow causes spectacular crashes and a non-destructive stack print is useful to monitor problems before they occur. For this implementation try entering

...

```
: depth sp@ 123 swap -2 / ;
: .s cr depth if sp@ 2 - 121 do
  i @ . -2 +loop else ." stack
  empty " then ;
```

As stack overflow should be subject to a government health

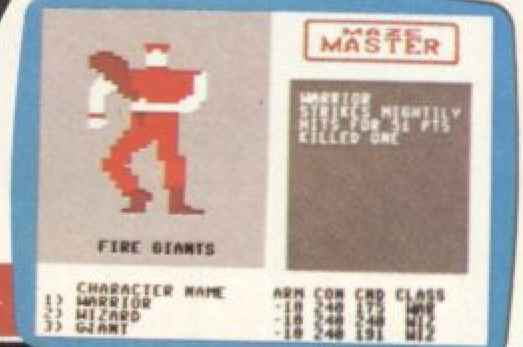


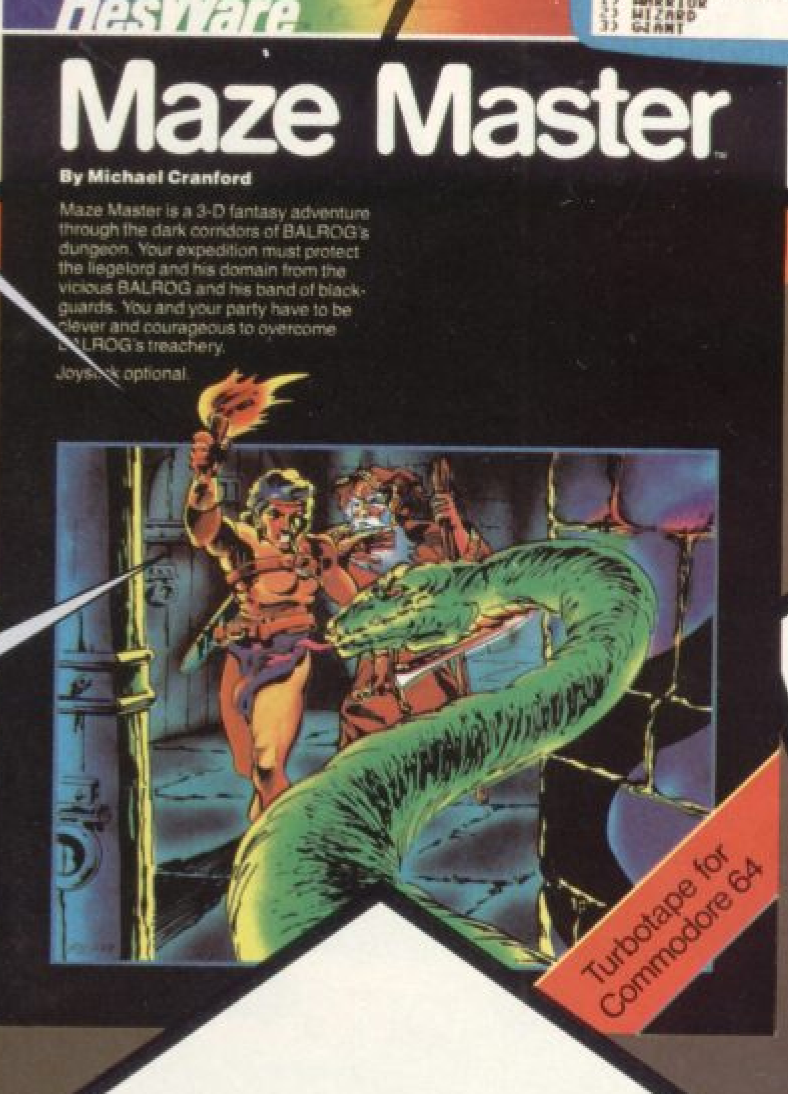
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warning anyway, you may find this useful as well ...

: stack? sp@ 50 < if quit ."Danger – stack overflow!" then ;

... which gives a depth of 37. More than enough I should think.

FIG Forth is a full-scale implementation of the language, and as such seems to fit home computers badly at the corners. I think any pure implementation will suffer in this direction. Change it to fit the characteristics of the computer, and immediately the implementation is non-standard.

Tape vs Disk

Romik, I suspect, has been faithful to FIG. The main drawback is using tape as a substitute for disk – far too slow and cumbersome. It is better than nothing, though, if you don't have a disk unit.

I find the price of £19.99 somewhat high for a taped program, given the inherent difficulties. I know whose implementation I'd prefer when diskless! The choice is therefore between standard Forth and relative ease of use. As ever, you pays your money and you takes your choice.

By now regular readers should have an idea of what Forth is and maybe why and how it can fascinate. Although *Exploring Forth* is designed to be a book for newcomers to Forth, I shall assume that I don't need to explain fundamentals in this column: the existence of a new book demonstrates the truth of the first line of the book that there has been escalating interest in the language in recent years.

What is a beginner going to look for? First you will have invested in an implementation of Forth. You'll want to protect that investment by learning about it in a practical manner. Few user manuals are helpful in this area and a book is needed – an intelligible book that doesn't cost the earth and that can relate to the micro-cosm (sic) of the user. Better still if it relates to his micro-computer.

Exploring Forth is a straight-forward book that sets the reader entering Forth words early on. It is emphasised by the author that the best way of exploring Forth is to sit down at one's machine and enter things to see what happens: I am in total agreement. One of the most satisfying bits of it all is putting it into practice. (Computer buffs do it with their fingers! This statement has nothing to do with the review.) Each chapter concludes with an 'Explore More' section inviting the reader to solve problems. No answers are given. This really is the way to see what happens if ...

The first avenue explored is arithmetic in parallel with the stack. All proceeds well for a while; but I feel that binary arithmetic and an explanation of signed intergers in terms of two's complement is a little on the heavy side for a novice at this stage in the proceedings.

From chapter 5 constants, variables and elementary number formatting are introduced. The approach to the latter is interesting. Other systems and pundits rely on the [<#], [#], [#s] and [#>] words which use [hold] and [sign] in formatting numeric strings. Bishop simplifies matters by using [."] and [.r] or [d.r] with equally effective results. Moreover these words are easier to understand than [#] etc. which can be left until the user has a bit more Forth experience.

There is a section on high-resolution graphics that looks interesting. As we all know, however, Commodore did not make it easy to implement hi-res even in Basic: some day for this column I'll work out how it can be done in Forth. (From this you may infer that I have not tested the hi-res routines in the book.)

Bishop is right to suggest that Forth should make use of features of the micro for which it is implemented. To a large extent this is left by Forth systems (at least the cheaper ones) to the user. There is therefore a lack of words explicitly to create hi-res graphics. For CBM owners, words such as [>VDU] defined with a specific action on the BBC machine are of little use. A whole

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new routine must be created for whichever CBM machine is in use to enable hi-res and user-defined graphics.

I was particularly interested to read about how Forth stores the items such as arrays that are created as you go along. Although I have read other books, I found Bishop's exposition rather easier to understand by being less technical. The use of [@] and [c@] to explore the contents of memory cannot be over-emphasised as a worthy exercise – and a lot easier than Basic's PRINT PEEK(n).

Loops

The chapter on loops caused me to pause. The name Fibonacchi fascinates me mainly because I can't spell it: apart from that, the series of numbers that bears the gentleman's name has a certain appeal and a suitable word is defined for your pleasure. The word [user-friendly] is delightfully ironic. Even if you don't ever read the book, try entering ...

user-friendly begin ." hello" again

– and discover the true meaning of an endless loop.

There are a number of other goodies contained in the later pages. There are some sort routines for those who like that sort of thing; and (I assume to assist those who suffer deprivation pains) routines for formatting input and output of floating point numbers.

This raises a deep philosophical point. Forth addicts may well throw up their hands in mock horror at using simulated floating point numbers in an integer environment. Really the choice is the user's. Forth can be adapted to suit individual tastes and needs of the moment. The definition of these floating point words merely illustrates that principle.

The final chapter on logic is as good a presentation of the subject as I have seen. Bitwise logic for the non-mathematician is always a heady potion: it is presented here with clarity and a practical problem solving purpose. Although that purpose is a little esoteric, again the principle can be adapted as required.

Conclusion

Owen Bishop has written a readable beginners book. He does not attempt to enter the debate about Forth standards: he sets out to provide material which will demonstrate and teach Forth at the keyboard.

My only complaint is the choice of Acornsoft Forth for the BBC machine. It is also unfortunate that the Jupiter Ace for which specific examples are provided has ceased production in the time taken between writing and publishing the book. (Was fate stacked against it?)

The appendix on conversion to other systems is a little light and I see the cause of this in the emphasis placed on the two machines. A further appendix providing a list of standard words would have been a useful addition.

All in all, an enjoyable book with some good and some poor aspects. This being a column on Forth using CBM machines, you must decide for yourself whether the references to competitor machines detract from the book's value. In these circumstances I confess I would think twice before buying it.



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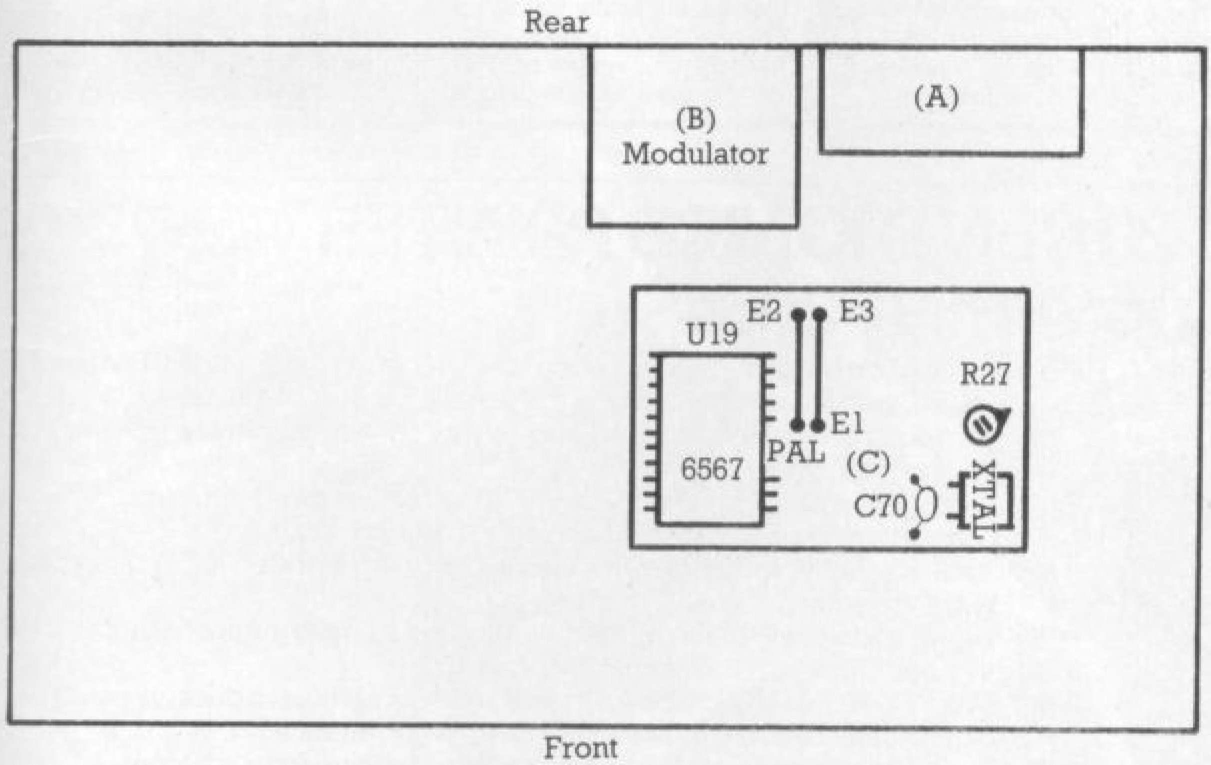
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How to convert a 64 from NTSC to PAL

Some time ago an unhappy friend called me with this tale: "I made a business trip to the USA, and I bought a 64 for my son (which, of course, was a lie, as it turned out) and I thought that I made a bargain: the price was good and I also managed to smuggle it through the customs (thereby avoiding the Swedish VAT at a hefty 23.64 per cent). When I connected it I only got a black and white picture that was impossible to make steady. What can I do, I went to the local shop and they said that the machine is unusable in Sweden."



The circuit board inside the 64. The layout may not be always identical, but component numbers are.

This type of blunder is not too uncommon, unfortunately. To say it in an untechnical way, there are two reasons for the trouble:

1) We have different colour systems for video (TV) pictures. The one in Europe is called PAL (phase alternating line); in USA and Japan they have NTSC (Never twice same colour – if I remember correctly).

2) We have a different mains frequency to which the TV picture frequency is related.

At least the number of lines making up the screen (625 in Europe, 545 in Japan and the USA) is not significant in this case.

If you are satisfied with a black and white picture it is possible to retrim an old TV without having to open your computer. We will not handle that subject here, though: I'll deal with tweaking the 64.

To convert from NTSC to PAL a few accessories are needed. These may turn out to be rather expensive, I'm afraid: but it may be better than to leave your computer unused! Some of the components could be bought in the local radio service shop but most of them have to be bought at a Commodore Service Centre. This is what you need:

- a new mains unit – do not try to connect the American mains unit to your wall outlet. Alternatively you can buy a step-down transformer with an input for 220 volts (continental Europe) or 240 volts (UK) and an output of 117 volts to suit the original mains unit
- 40-pin integrated circuit called the 6569
- crystal, frequency 17.734472 MHz
- a miniature ceramic capacitor at 15PF

You have to be very well trained in soldering in order to do this, and if you are in any doubt at all please turn to a friend who can do it for you. The machine has a delicate but well made PC board, double-sided, and therefore it is more difficult to work with than something like the board for a hi-fi amplifier.

I must also point out that there are many different versions of the 64 around which do not look alike inside. Before you buy all the things listed, open your unit to see if it resembles the one described here.

It must also be pointed out that if you open it the guarantee will be void, which might not do anything in this case because it is only valid in the country where you bought it. (Commodore: how about a worldwide guarantee system?)

Switch off the computer and take out the mains plug. Open the cover by unscrewing the three screws on the bottom cover, the side normally towards you. Fold the keyboard upwards – be sure not to harm the wires going to the LED indicator: disconnect it if you like, as well as the cable harness to the keyboard. Loosen the foiled

cardboard stuck to the shield of the cartridge expansion port (A). Fold the cardboard over the edge towards you.

Now you can see two tin boxes (B) and (C). Locate the IC called U19 in the (C) area – (C) may have a cover which you will have to remove carefully using a small screwdriver.

U19 is a 40 legged integrated circuit and should be marked '6567'. Remove this IC, preferably using a special tool (two small screwdrivers may do the trick if they are stuck in under the IC at its short sides). Please remember the direction of the IC, usually marked with a small slot on one of the short edges. Now push in your new 6569, in the same direction! The legs may have to be bent somewhat inwards to fit the IC holder properly. Check that all the legs are exactly above their holes; then push evenly over the whole IC trying to get all the 40 pins down into their holes at the same time (otherwise the legs may be damaged).

Locate C70 in the same area (C). Desolder the present one and solder the new one there instead. Just beside it you find the crystal: change that too.

Now there is only one more thing to solder and that is the jumper wire, also in the (C) area. In case of an NTSC 64 the jumper goes between the letters E1 and E3, printed on the board. Desolder the wire and move it to the adjacent position, between markings 'PAL' and 'E2'.

Now we shall remove the cover of the modulator (B). It seems that the cover is soldered on one point on most machines I have seen, so this must be loosened in a special way – dissoldering with one hand, peeling off the cover with the other.

After all this is done it is time to check everything. Make sure that there are no leftover wires and other things that can cause short circuits on the PC board (it is not necessary to reconnect the keyboard yet). Now connect the power supply in both ends and switch on the computer. You should see something that may become a colour picture.

Locate a trim potentiomenter, R27 in the (C) area, near the crystal: turn it gently. Now it should be possible to get a stable colour picture.

If you are dissatisfied with the picture you have to go to the modulator (B). Inside there you can see some trim points: they look different but all have a slot for a screwdriver. These should be turned by a very small screwdriver made of nonmagnetizable material, for instance plastic or copper. Go through the trim points one by one, turning them carefully to either side of their original position: and watch the screen. You should find that one of those controls optimizes the picture. Some 64s have a control called R25 which shall also be tried and turned to optimized position.

Then maybe the previous control has to be readjusted again because those controls interact: but finally you will get a good picture. Just do it methodically, and do not rush. Always keep track on how many turns you do in either direction on each control so you know where you started.

Do you have any sound? Connect your keyboard – switch off the computer first. Load a program with sound or make some POKE statements to produce a triangular wave (see manuals). If there is no sound, or it is distorted, it's time to try and trim those points in the modulator which did not appear to have any effect when you optimized your picture. When doing that you should be able to optimize the sound to become free from distortion.

If by doing this the picture deteriorates again, you should go through above picture optimizing once more, and then the sound again, until everything is okay.

Now put the whole thing together again in reverse order. And good luck!

Memo to readers in France – this procedure should also work to convert a SECAM 64 to PAL. Ed.

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The £1,000 competition winner

Peter Bartley of Ushaw College, Durham, won the £1,000 competition we ran in the February, March and April issues.



Actually, none of the entries were entirely correct. But Peter was one of those who got only one of the Part One questions wrong; and his Parts Two and Three answers were thought very good. He came up with the only re-tellable computer joke out of the lot (embellished into a shaggy dog story)!

The joke

A man carrying two heavy black suitcases is stopped in the street by another bloke who asks him for the time. Man puts down suitcases and pulls back sleeve to reveal a tiny black watch. He presses the button and the top slides open to reveal a miniature microcomputer. He says to it "Time?"; a faint whirring as the miniature floppy disk loads in speech recognition program, a click or two as the heads engage, and the watch glows momentarily.

"Which time?" it says in a thin but perfectly modulated BBC voice. "Greenwich Mean Time, British Summer Time, French Summer Time, Pacific or Eastern Standard Time –"

"Greenwich Mean Time" interrupts the man. "Ok" says the watch "But I'd rather do half-life calculations for sub-atomic particles. By GMT it's ten fifteen and 30.0047 seconds. Or at least it will be when I've finished talking." "Thanks" says the man, and he presses the button again.

"My God!" says the bloke who asked for the time. "That's really amazing! I've never seen a computer that small – can I buy the watch from you?"

The bloke with the watch explains that it's a prototype one-off, but after much pleading he agrees to part with it for £2,500 and the bloke's two-week timeshare in Marbella.

Pleased as punch, the new owner puts on the watch and walks away gleefully punching the button. He hears a shout, turns round, and sees the other guy puffing along with the two heavy suitcases. "Hang on" he pants; "Don't you want the batteries?"

The Part One answers

1. What is the name and country of birth of Commodore's heavyweight founder?
   Jack Tramiel was born in Poland of Jewish parents
2. a) What did Dorr E Felt build in 1884 using meat skewers, rubber bands, staples and a wooden macaroni box?
   An early comptometer

   b) Approximately when was the abacus invented?
   Some say 2,000BC, but it was probably nearer 3,000BC

   c) Babbage designed two 'computers' – which one got built (more or less)?
   The Difference Engine
3. What do these acronyms stand for?
   a MOSFET e SID
   b EPROM f VIC
   c DIP g IEEE
   d PET h ADSR
   a Metal Oxide Semiconductor Field Effect Transistor
   b Erasable Programmable Read-Only Memory
   c Dual In-Line Package
   d Personal Electronic Transactor
   e Sound Interface Device
   f Video Interface Chip
   g Institute of Electronic and Electrical Engineers
   h Attack, Sustain, Decay, Release
4. If you add 1 and 1 together and get 10, you're either lousy at maths or you've got it right. Why?
   Because you're using binary arithmetic
5. And if 1 and 1 make 1, you're either lousy at maths or you're using a special form of algebra. What's it called?
   Boolean algebra
6. Who designed the Pet? Was it:
   a Steve Jobs d Jack Tramiel
   b Chuck Peddle e none of these
   c Bobby Moore
   b Chuck Peddle
7. What was the first thing Commodore manufactured? Was it:
   a the Pet d a typewriter
   b an office desk e the Vic
   c a scientific calculator
   d Typewriter
8. Can you list three fruity and one nutty computers?
   Choose from Apple, Apricot, Acorn, Peanut, Tangerine ... and more!
9. If a computer is described as 'dedicated', does it:
   a like you very much
   b perform only one task
   c spend a lot of time at Greenham Common
   d perform only for one person
   e perform only once
   b performs only one task
10. Commodore has a Vic and 64 manufacturing plant in Britain. Where is it?
    It's at Corby in Northants. No manufacturing is done in Slough; and in any case everything is moving to Corby later this year
11. If black and blue is 14, what's blue and black?
    104 (work it out!)
12. Who wrote 'Gridrunner'?
    Jeff Minter
13. There's a computer language called Ada. Is it ...
    a an acronym? If so, what does it stand for?
    b named after someone? If so, whom?
    It is named after Ada, Countess Lovelace – cousin of Byron and (by virtue of her relationship with C Babbage) a lady with a good claim to be the world's first programmer
14. What are the alternative names of the Timex T1000 and T2000?
    Sinclair ZX81 and Spectrum
15. What does 'atari' mean?
    It's Japanese for 'warning' and has the same meaning in the game Go that 'check' has in chess
16. How do you put a tick on to a Vic or 64 screen in direct mode?
    Type Shift @ in lower-case mode
17. Spot the deliberate mistake and solve the possible INPUT problem in this clock display routine:

```
100 INPUT "HOURS": H$
110 INPUT "MINUTES": M$
120 TI=H$+M$+"00"
130 PRINT
"TIME="LEFT$(TI$,2):":":
MID$(TI$,3,2):":":RIGHT$(TI$,2)
140 GOTO 100
```

    The INPUTs in lines 100 and 110 should be followed by semi-colons, notcolons: line 120 would crash with SYNTAX ERROR unless you use TI$: the colons outside quotes in 130 should be semicolons
18. What in theory is the maximum number of all types of variables that you can have on a Vic or 64?
    We reckon it's 5,769, as follows:
    numeric:
    A–Z=26
    AA–ZZ=676
    A0–Z9=260
    string
    A$–Z$=26
    AA$–ZZ$=676
    A0$–Z9$=260
    integer
    A%–Z%=26
    AA%–ZZ%=676
    A0%–Z9%=260
    Same again for arrays. Less three reserved variables (TI, ST, TI$) gives the 5,769
19. Which new home computer would you expect Captain Kirk or Mr. Spock to use?
    The Elan (or Flan, or Enterprise Computers) Enterprise
20. Are there any real operating systems in the list of names below? If so, which one(s) are they?
    a TRSDOS
    b DOMES-DOS
    c CP/M-140
    d UCSD b-system
    e Zenix
    TRSDOS is the only real one here – though the rest all have names similar to those of real operating systems.

COMMODORE USER: CHART UPDATE

CBM 64 TOP 20

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2	(1)	**Space Pilot**	Anirog
3	(2)	**Manic Miner**	Soft Projects
4	(7)	**Forbidden Forest**	Cosmi
5	(3)	**Hunchback**	Ocean
6	(8)	**International Soccer**	Commodore
7	(9)	**Revenge of MCs**	Llamasoft
8	(–)	**Blagger**	Alligata
9	(–)	**Solo Flight**	Microprose
10	(–)	**Flight Path 737**	Anirog
11	(–)	**BMX Racers**	Mastertronic
12	(14)	**Speed Duel**	DK'Tronics
13	(4)	**Scuba Dive**	Martech Durell
14	(6)	**Pilot 64**	Abbex
15	(–)	**Sheep in Space**	Llamasoft
16	(–)	**Aquanaut**	Interceptor
17	(11)	**Aztec Challenge**	Cosmi
18	(–)	**Harrier Attack**	Martech Durell
19	(–)	**Pyramid 64**	Fantasy
20	(–)	**Superpipeline**	Taskset

TOP 3 MANUFACTURERS:

LLAMASOFT
ANIROG
ALLIGATA

An independent chart to best-selling Vic-20 games, compiled by R.A.M./C. for Commodore User, representing retail sales in independent specialist outlets referenced against distributive sources. Sales for May period.

Good and bad points

We also asked competitors to list the five best and worst aspects of the Vic and 64. We broadly agreed with Peter's list:

The five best points of the Vic-20:

1. **Keyboard**
2. **Price**
3. **Good range of voices/noise**
4. **User-defined and multicolour graphics**
5. **'Games expandability' ie joysticks, cartridges, lightpens, paddles etc can be used, plus extensive software available**

The five worst points of the Vic-20

1. **Small memory**
2. **Small screen width**
3. **The 'Spaghetti' sometimes the external power supply and RF modulator and their associated wires are a real pain in the neck – especially if you move the micro around a bit**
4. **Poor filing commands – not really versatile, INPUT#** and so on
5. Basic is slow, as provided on machine.

The five best points of the CBM 64:

1. Excellent graphics, including sprites
2. Very good sound (built in synthesiser)
3. Large memory
4. Serious business applications (like church parishes!) – word processing, spreadsheets, etc
5. Available software is excellent – new languages available and so on

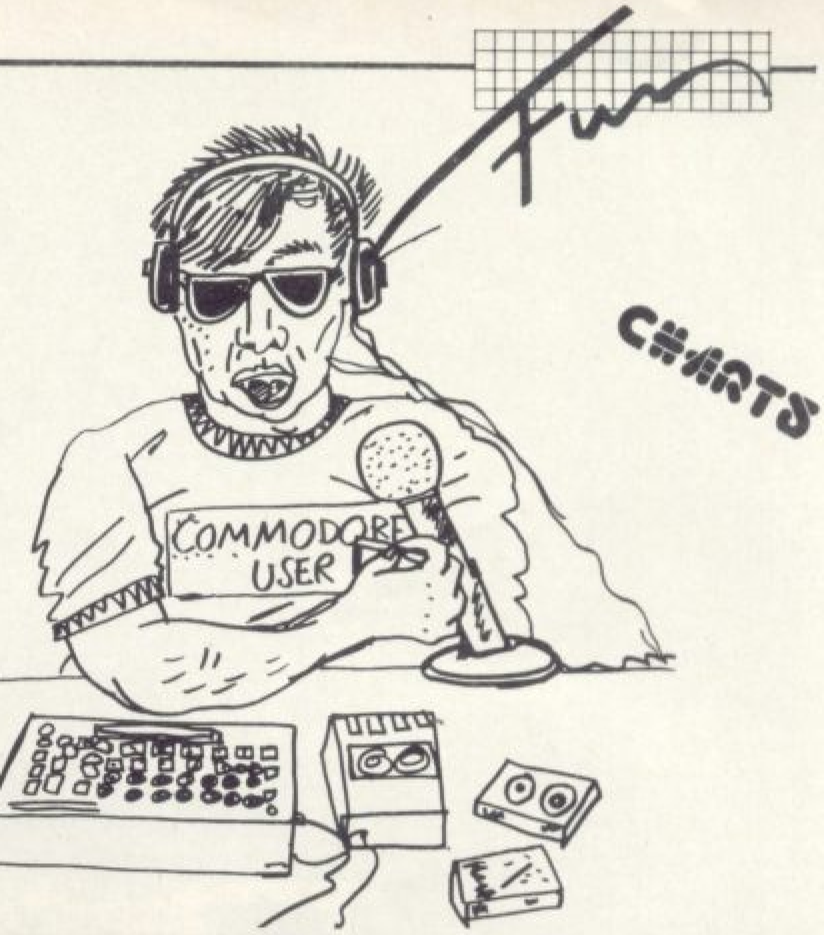
The five worst points of the CBM 64:

1. Poor Basic (fairly slow as well)
2. No hi-resolution graphics directly available
3. Interfacing with non-Commodore peripherals is difficult, hence you are limited to CBM printers etc, unless you buy an interface
4. Sound, although good, is difficult to use
5. Prohibitive price of add-ons

The games

Part Two asked competitors to outline some games. We'll be using Peter's as the basis for our next competition ...

Well done, Peter Bartley!



COMMODORE USER: CHART UPDATE

VIC 20 TOP 20

1	(–)	**Flight Path 737**	Anirog
2	(10)	**Chariot Race**	Microantics
3	(8)	**Flight 015**	Ferranti
4	(1)	**Crazy Kong**	Interceptor
5	(5)	**Snooker**	Visions
6	(–)	**Computer War**	Creative Sparks
7	(–)	**Bongo**	Anirog
8	(6)	**Sub Commander**	Creative Sparks
9	(2)	**Jet Pac**	Ultimate
10	(12)	**M.L.B.A.T.E.T**	Llamasoft
11	(3)	**Wiz and Princess**	Melbourne
12	(4)	**Hell Gate**	Llamasoft
13	(–)	**Tank Commander**	Creative Sparks
14	(15)	**Matrix**	Llamasoft
15	(11)	**Emmet Attack**	Commodore
16	(–)	**Dracula**	Anirog
17	(–)	**Duck Shoot**	Mastertronic
18	(20)	**Mine Madness**	Creative Sparks
19	(7)	**Sargon II Chess**	Commodore
20	(20)	**Tower of Evil**	Creative Sparks

TOP 3 MANUFACTURERS:

CREATIVE SPARKS – (THORN EMI)
ANIROG
LLAMASOFT

An independent chart to best-selling Vic-20 games, compiled by R.A.M./C. for Commodore User, representing retail sales in independent specialist outlets referenced against distributive sources. Sales for May period.

Commodore's Magic Desk previewed

by Albert van Aardt

There are a couple of much-promoted novelties in the world of 'business' microcomputers right now. One is the use of pictures on the screen to which you 'point' with the cursor – rather than typing a command, you indicate the symbol that corresponds to what you want to do. The other is the idea of a single program containing multiple functions, typically word processing, records handling and spreadsheet work: the results from one can be used instantly in another.

Too complex for the modest Commodore 64? Commodore didn't think so. Over in the States Commodore has been making quite a noise about Magic Desk cartridge, saying things like 'it's for the person with no programming skills'.

Well, at least they were right on that score.



If that introduction sounds a bit bitter to you, it is because I'm rather dissapointed in this product. But let me first tell you what it's all about.

Magic Desk is a cartridge which plugs into a Commodore 64 with disk drive. The idea is excellent: provide the user with pictures, rather than words, to let him or her use the program. When you switch on you're presented with a screen showing a desk with a telephone, calculator, typewriter, a cardex-type box and something that looks like a pad of dollar notes. Underneath the desk is a wastepaper basket; next to it a filing cabinet, on top of which there is an electronic clock. In the background there is a door. A hand, with a pointing finger, hovers in the air.

'Help' screens are provided to tell you what to do on the functions available. So, in theory at least, you can get along merely by using them – no need for a manual or a learning curve.

The moving hand ...

So far so good. You are supposed to move the hand with a joystick to the function you want, and select it with the fire button.

If you choose the typewriter, you are presented with another hi-res graphics picture – looks like the platen bar on a typewriter with a piece of paper inserted. You can now type a page, and correct errors without the use of Tippex. You can also set tabs left and right; and the computer makes a realistic noise, just like a real typewriter.

Once you've finished your letter, you can return to the 'desk' – using the joystick again. You can now choose any of three 'drawers' in a filing cabinet; each contains ten 'folders', each folder has ten pages in which you can 'file' your letter. The folders and the pages can be given names so that you could reference them later and extract your document.

... and moves on

Commodore calls this 'type and file': and that is exactly all you can do. No word processing, no search-and-replace, no calculations, no cross-referencing ... I don't know whether Commodore intends bringing out all these functions on disk; but right now, Magic Desk cannot do any of them.

And even within its limited scope there are a number of irritating snags:

- There is no warning given when you reach the end of a page. This means that you can happily overtype your last line until you notice what's happening. If a slow typer like me finds this very frustrating, imagine the language of some of the touch typists!
- Very few documents are only one page long – not even my letters to the taxman. So why is the user limited to one page at a time?
- While you're typing in the middle of the page, you have no idea of how far you are from the top or bottom. This could be very important if you want to produce a nicely-formatted letter or report.
- After some trial and error. I discovered that you could use the keyboard to position the hand:

  Fire = CTRL J
  Right = CTRL G
  Left = CTRL D
  Down = CTRL A
  Up = CTRL CRSR RIGHT

  So why not say so in the three-page write-up?
- Magic Desk uses a relative file organisation on disk. Now I have seen some *real* magic being done with relative files – but I'm sad to say none of the powerful capabilities available are used in Magic Desk. Even more disappointing, you cannot use this data that you've typed in other programs, like, for example, a word processor.
- The program does a disk access every time you go to the filing cabinet. Obviously the authors of the program didn't bother reading in the directory into memory on the first access – wasting your time at the end of every page.

Is it any better than a typewriter? Marginally so; you can correct mistakes on the screen, and you can file 300 pages on one floppy disk. For an absolute novice, I would say Magic Desk is an ok way to get into computers – it will definitely break the ice. And for children I think it is a very good program, because it combines the idea of playing with some more serious aspects as file handling.

A very rough calculation shows that this program with one page typed should use about 15K of memory. Basic gives you at least 38K: so why, oh why, didn't they use all that power in the Commodore 64?

In conclusion

As I said, the concept of a pictorial driver is quite good ... although the functions available are very primitive. if the other functions, like a calculator, telephone directory, financial journal and the like (and just what lies beyond that door on the menu?) were available, it would be a good package for a small business. If more thought had gone into the *application* and less into the graphics, then it could have been a great package.

Right now, it is not up to scratch, and some other software I've seen (like EasyScript) beats it hands down.

Will I buy it? No. Should you buy it? Only if you bought a Commodore 64 and don't know why, but want to do *something* with it.

New for your CBM 64

Sunday League Cricket simulation game

HIT AND RUN

30 players to choose from giving thousands of different permutations for team composition. One or two player game (in fact the whole family could join in to decide tactics etc.)

Sunday league rules:- 40 overs per innings.

Bowlers are limited to eight overs and may not bowl more than two successive overs.

Conditions vary from match to match. Wides, byes, no ball, etc included.

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cassette £7.95 (plus 50p PP)
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Send S.A.E. (marked '64') for full lists of 64 software (Leisure, Educational and Business).

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Top of the Pops for Vic 20 +8K £4.99
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Election Night Special Lead your own Party into the next General Election. A game for 1-3 players. Printer/game save.
Election Night Special for Vic 20 +8K £4.99
64 Election Night Special – bigger and better .... Coming soon

Party 4 Four games to match the progress of your party: Masterword, A Day at the Races, Game X (Strip Poker) and Consequences. Harmless fun (nothing offensive) but good fun.
Vic Party 4 for Vic +3K or more £5.99
64 Party 4 .... Coming soon

NEW: Adults Only Fun game for 2-10 broadminded players. Lots of cuddling and kissing, plus many other rewards and forefeits: you never know what you'll end up doing, or with whom! Nothing offensive, but you MUST be fairly broadminded.
Adults Only for Vic 20 +16K expansion £5.99
64 Adults Only .... Coming soon

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All prices include P&P (UK only). Games sold subject to conditions of sale which are available on request.
Please write or phone for details of our full range.

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Anger Productions

CBM 64 Software



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Joystick preferable. **Cassette game £9.95p**

YANTZEE
Play this very skilful old Chinese dice game, either by yourself or with your family and friends. (Up to 4 players). This chinaman uses 3 dimensional dice! **Cassette game £7.50p**





PLAY GOLF
Take up the challenge to play Golf on this 18 hole par 72 course. Play to full PGA Rules and learn the game or improve your handicap at home. **Cassette game £7.50p**

ASSEMBLER
Help yourself to learn how to write, read and copy your own machine code programs. Some knowledge of machine code is preferable to maximise the use of this tape. **Cassette £6.95p**



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Teach-in

Lionel Carte· .nd Dr. Era Huzan are both highly qualified academics. .nis is reflected in the very formal approach that you get in their *Teach Yourself Computer Programming With the Commodore 64.*

The book is biased towards data processing (just like *Commodore 64 Computing* by Ian Sinclair which I reviewed in the October issue, but didn't get the credit for because our glorious editor forgot about me, moan, moan); so the initial chapters concentrate on input and output of data, and the need for good program design.

I was glad to see a section on flowcharts, a subject which seems to have gone out of fashion these days. Flowcharts, lead logically on to branching and loops ... which should in turn lead into subroutines and arrays. Instead there's a rather weak chapter on colour followed by one on the 64's mathematical functions (which is aimed around the O Level Maths mark).

Chapters on arrays and subroutines finally do arrive and are worth the wait. The concept of multi-dimensional arrays is simply and clearly explained. But then suddenly up jump two chapters on sprites and sound. Multi-coloured sprites are covered and the section on sound makes sound (*ohmigod – Ed*) use of subroutines, although the SID chip is not really exploited.

Next several interesting and serious application programs are de scribed and listed – mortgage interest, experimental data process ing and linear regression. The use of disks and printers is include together with a detailed explanation of disk commands and a usef name and address program for the printer. The final two chapte deal with the creation and use of sequential files on disk and tap and processing the data thereof; a simple but apparently con prehensive stock control program is used as an example.

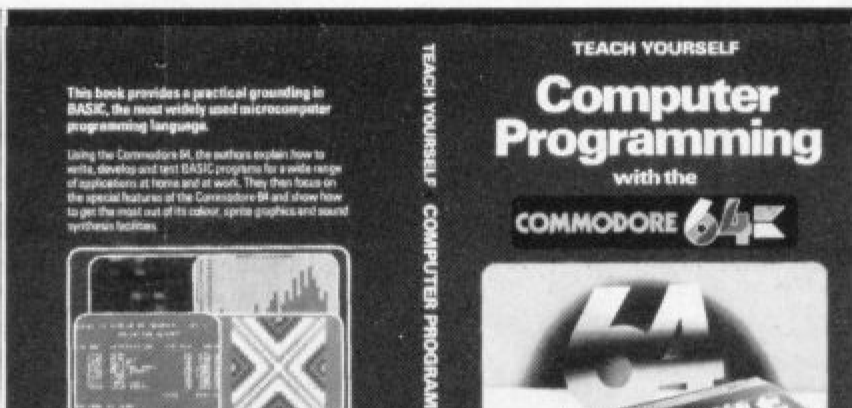
The book's a little disjointed with chapters on colour and sound ap pearing out of sequence, but all the information is there. It is aime at the serious home and business user, and does not attempt to ex plain the many advanced technical features of the 64: game graphics and sound enthusiasts seeking clues to the inner secrets of their computer should steer well clear. The majority of the chapter set relevant programming problems for the reader, and model an swers are provided in an appendix if needed.

To get the most out of this book you must work at it, followin the examples and problems set: the result will be a better ap preciation of structured programming techniques and a mor methodical approach to problems. At £2.75 this A5 paperbac with its 200 pages of good quality paper and print is exceller value for money.

BOOK

LOOK

Teach Yourself Computer Programming with the Commodore 64

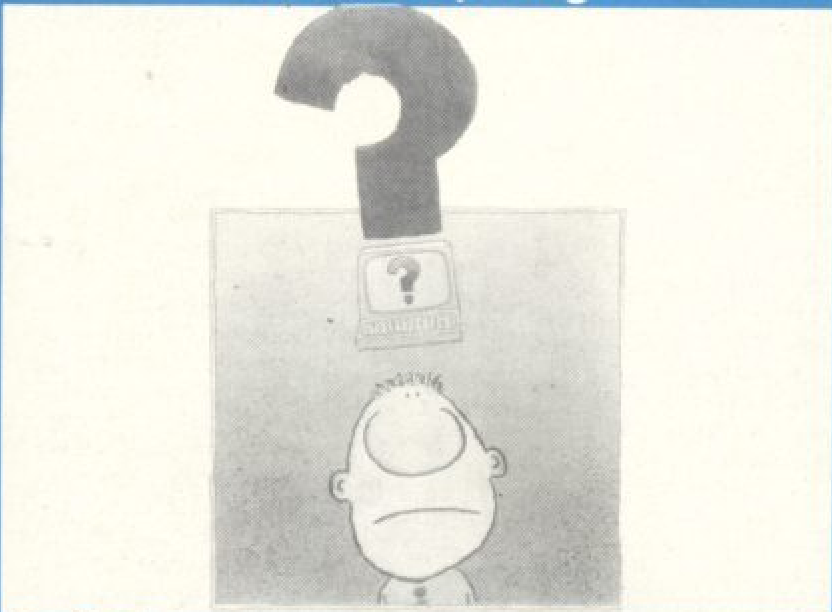


The Book:	Teach Yourself Computer Programming with the Commodore 64
The Author:	Lionel Carter and Era Huzan
The Publisher:	Hodder & Stoughton
The Price:	£2.75
The Reviewer:	Ken Ryder
The Conclusion:	Excellent value


COMMODORE 64
DRAGON 32
Our Hapless Hero's Latest Adventure
Cuthbert in Space
CUTHBERT 2
LEAVING DROUGH
Actual picture of Commodore 64 Screen Display
The Federal Chief has decided that Cuthbert is to go on a mission of plunder against the Moronians Solar System. Cuthbert lands his spacecraft on each planet but then has to refuel by stealing pods from the Moronian fuel dumps whilst avoiding the Solar Meteroid Barrage. After filling up he goes and plunders as much loot as possible before take-off. All could go well but when he gets a malfunction he must send a pilotless shuttle to obtain spares and take off before the Moronians' bomb detonates.
CUTHBERT 1
CASSETTE £8
DISK £9.95
Credit Card/Mail Order
MICRODEAL MAIL ORDER
41 Truro Road, St. Austell
Cornwall
PL25 5JE
Phone
0726 3456
Available from
Dealers nationwide or from larger branches of
Boots
MICRODEAL 1984

BOOK LOOK

The Beginner's Guide to Computers and Computing



The Book:	The Beginner's Guide to Computers and Computing
The Author:	Peter Gerrard
The Publisher:	Duckworth
The Price:	£6.95
The Reviewer:	Clive Bulmer
The Conclusion:	Friendly and informative

The Beginner's Guide to Computers and computing **has been written in a friendly non-technical way: and is, in short, a mine of information.**

The book is aimed at the beginner to computing and also at the person who knows nothing about computing but would like to get to grips with some of the jargon before taking any further steps.

Pete Gerrard begins with a short yet interesting feature on the history of computing, moves with skill to the why, for and hows of computers, and concludes with some interesting sections on programming in Basic and machine-code. The book is full of interesting ideas and facts about computers and computing: and it fully justifies its price of £6.95.

If you are new to computing, contemplating buying a machine or (more usual these days, a disillusioned parent) then this – at last! – is the book that will answer your questions.

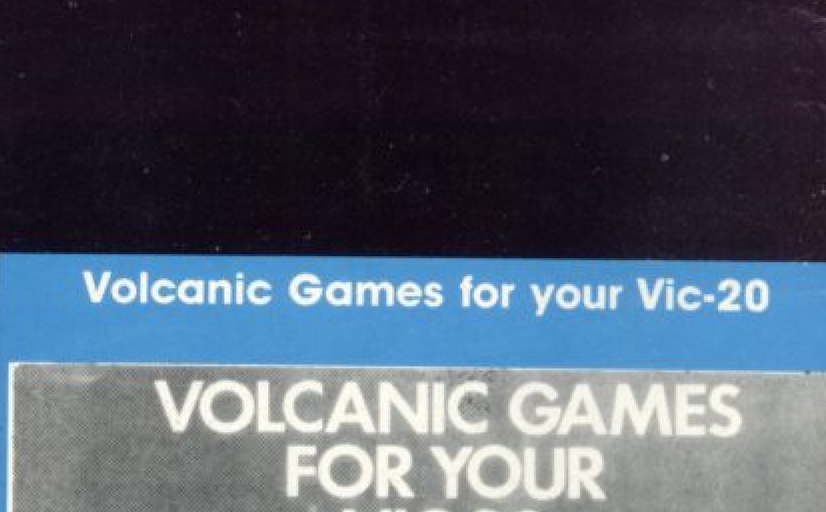
The first thing that strikes you about this book is its size – but don't l that put you off. Within its pocket-sized form are to be found 30 game only five of which require extra memory. And *Volcanics Games for yo Vic-20* aims to provide something for everybody from 6 to 96.

There are games to play on your own and games to play with your friend Most types of games have been well represented – fast action, puzzles, brai teasers, boardgames, and of course arcade-type games.

Those I tried all worked and was quite impressed with the various scree displays. Although the book contains little documentation, the listings at lea contain their fare share of REM statements so enabling any alterations to b made. I particularly liked the length of the programs and felt the half-ho or so spent keying in the listings well worth the results at the end.

Volcanic Games **is cenainly a book for the Vic-owner's bookshelf. An at £3.95 it represents good value for money.**

Volcanic Games for your Vic-20



The Book:	Volcanic Games for your Vic-20
The Author:	Hal Renko and Sam Edwards
The Publisher:	Addison-Wesley
The Price:	£3.95
The Reviewer:	Clive Bulmer
The Conclusion:	Good value



PIRATES!

The great debate on the high seas of the software industry rages on. The good ship ***Commodore User*** *repels a boarding party of irate software houses and acquits herself nobly. Now read on ...*

The pirates return ...

It is of paramount importance to everyone within the software industry, be it on the development or advertising side, to stamp out software piracy before it completely oversteps the mark and there is no software industry.

One way magazines in particular can be of assistance would be to stop the user group lists in the magazine now before it is too late.

Microdeal Ltd. 41 Truro Road, St. Austell, Cornwall PL25 5JE.

This circular came with a copy of a letter from one of Microdeal's customers who had found an Irish 'club' selling what were obviously bootlegged copies of its games. Now that kind of thing we have no difficulaty at all in condemning as illegal, unethical and – in the long run – counterproductive. (Microdeal's games aren't at all bad, but if Microdeal can't afford to do them they're denied to the rest of us).

As for listing clubs, one of our functions is to provide information. Hopefully it's good information, but we can't check the credentials of every club we list. We certainly would not continue to publicise any obvious rip-offs – whether it's the legit software suppliers or the pirates.

... Walking the yard arm ...

Your reaction to our letter regarding piracy is symptomatic of the ostrich-like mentality that afflicts our industry. You have totally failed to grasp the nature and magnitude of the problem.

Our market research reveals that games-playing school children typically own in excess of 100 games, all copies. If you would like to see our market research forms actually filled in by these people it might bring the facts of life home to you.

The criminals responsible for pop and video piracy have turned their attention to game software. The counterfeits they produce are indistinguishable from the real thing and flood the market almost as soon as a new game is released. We can show you examples of counterfeits and the technicians' reports needed to identify them.

The result of home and school and computer club piracy allied to illegal counterfeiting is that sales of new products dry up within a month of launch. This means software houses are not getting the money they need to produce new products; your readers suffer.

Already the computer magazines are getting thinner because the software houses can no longer afford to advertise as much. Soon there will be an avalanche of software houses going out of business. After the sort-out, there will be less software houses selling far more expensive products (*Psyclapse* will be over £30 and totally copy-proof) and there will be less magazines.

I hope you have the courage to publish this letter.

B.C. Everiss, Operations Director, Imagine Software Limited, Tithebarn House, 1-5 Tithebarn Street, Liverpool, Merseyside L2 2NP.

To restate our position on piracy of programs: we're against it. We're not against taking back-up copies, but then who needs a back-up copy of a game? In other words, the large-scale distribution of ripped-off products is the cause for which we'll join Bruce Everiss on the barricades.

But we're yet to be convinced about the flood of software houses beating down the doors of the Bankruptcy Court. All the failures we know of in the last 12 months have been due to other causes — business and management factors, like not having enough cash behind them and knowing damn-all about marketing: or more reprehensible concerns, like the supplier ripping us off with crummy products, or banking the cheques and then disappearing.

The original letter to which Bruce refers invites the computer press to start a concerted campaign against copying. Specifically it demands we ask for laws creating "harsher penalties", we expose the copying clubs, we "filter out" ads for the pirates' products.

OK, then. We already do try to kill adverts for copiers before they appear: but since we don't get to see most of our ads until a few hours before our deadline, we can't guarantee to do that. Anyhow, it would be a bit arbitrary: we like the idea of a 1541 backup program to take security copies, we dislike the idea of a disk copier to run a mail-order bootlegging business.

We do our best. We also refuse ads featuring naked people with big tits, ads for snuff movies, and ads for political parties.

And we'll try to "expose" the copying clubs if we get to hear about them. Again, though, it's hard to spot the duff ones amid all those bona fide clubs.

As for changes in the law, I'm not sure that the guillotine is the right answer for a group of 15 year-olds who *all* want the Complete Jeff Minter Collection. There are laws available right now, and damn few tape-copying prosecutions have been done under them. Still if Mr Everiss wants us to campaign, we don't mind chipping in:

Dear Mr Brittan, Can we have a law to protect software houses against tape copying please? Thank you.

We're not being facetious about this. We do understand the suppliers' point of view: but quite apart from their willingness in the first place to enter a business where they knew that tape copying would be a fact of life, we dislike the idea of using a JCB to stamp on fleas. Mr E is hereby invited to demonstrate publicly the magnitude of the problem.

Our other objection is to blackmail, which brings us to...

The Anti-Press Release

In association with a number of similar minded software houses, PSS has taken a positive step in the prevention of home copying. The action to be taken is the threatened withdrawal of all advertising support from any journal carrying advertisements for tape or disc copiers.

The software houses concerned – PSS, CRL, Anirog, Silversoft, Interceptor, Microdeal and Visions – have all agreed to adopt a similar approach on the subject, as a show of solidarity in the prevention of piracy.

Gary Mays of PSS said,"There shouldn't be the need for such devices. We offer a replacement tape or disc should either fail to load, and I would have thought that this was sufficient".

It is hoped that many other software houses will support their colleagues in this matter, as this is one of the first major steps to be taken in the obliteration of piracy.

Gary Mays, PSS, 452 Stoney Stanton Road, Coventry CV6 5DG.

Now, this was a press release. Or a distinctly unveiled threat, depending on how you look at it. It repeats the more delicately-worded Guild of Software Houses letter in our June issue (can't these people get together on their media-bashing?) wherein a survey of journals was promised to see who was toeing the line on refusing copier advertisements.

We *do* refuse such ads, when we can spot them: if they slip by, they won't be run again if we can help it.

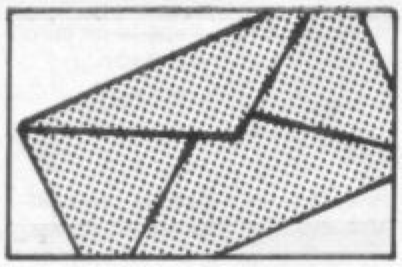
But we're not happy to be tarred with whatever broad brush the software houses are wielding. The computer press isn't one homogenous organisation with common standards and shared policies – any more than the software houses are. This kind of generalised warning to The Computer Press flies in the face of reality.

So let's hear some specific cases, can we? And let's have a bit more understanding of how journalists, editors and advertising sales people actually work.



Write away

This is your page: normally we write for you, but here we listen. Feel free to let us know what you think – about the magazine, about Commodore, about suppliers, about life, art, the meaning of existence or whatever. We don't print everything we receive, of course; but anything that might be of specific relevance or general interest will make it to these pages.



Clubland Update

Maybe you would be kind enough as to mention CLUB64, which could be best described as a Commodore 64 software user group, in a future edition of your publication.

As we have not yet fully decided the range of services that we should offer to our members we are seeking constructive suggestions. It should be mentioned that we have a particular interest in hearing from users who cannot attend club meetings because they are living in remote parts or because they are disabled or even because they do not have the time.

We have already established a library of high-quality public domain programs most of which have been checked and debugged. At present ten disks are available and every one of them includes between ten and fifteen programs which may be copied and distributed to friends, members of user groups, schools etc. We hope to add at least two disks per month and maybe, if we get enough suitable material, issue a regular newsletter on disk.

All 64 users with disk drives are invited to make use of our library.For anyone who only wishes to use the library there will be no membership fee but there will be a charge of £5.00 per disk. This includes the cost of packing and postage to any part of the British Isles (postage to other parts of the world will be extra) and the overheads involved in obtaining and copying programs.

As we are a non-profit making group we do not, at present, have the manpower or resources to enable us to make programs available on tape but if the demand is great enough for such a service we will try to find a way.

We are interested in obtaining news, information, product details, programs or any information suitable for inclusion on our proposed disk newsletter - would it be possible for software producers to supply short samples or trailers for inclusion on our disks?

Brendan Conroy, 85 Upper Drumcondra Road, Dublin 9, Ireland.

... And new date

I am writing to you to inform your readers of a new club which I have started. The Club does not intend to become commercialised, but has been set up to give more to the minority group of 32K Vic-20 owners.

The idea of the Club is that anybody who wishes to join can submit and also ask for programs, information etc from other members, just paying the postage required. There will also be a newsletter regularly which we shall just charge printing and postage costs for anybody in the Club who may wish to purchase a copy.

May I ask anybody interested in joining to send a SAE to the address below.

M. Valentine, The 32K Vic 20 User's Club, 101A Underdale Road, Monkmoor, Shrewsbury, Shropshire SY2 5EF.

Hands across the ocean

I would first like to congratulate you on a great magazine. I have been subscribing from the Christmas 1981 issue of **Vic Computing**.

One small criticism though: I don't like the way you say 'suitable for the kids' when you get an unsophisticated game. That's ridiculous. The only people who would like those games are people who have never seen anything of the sort and are absolutely fascinated by them.

In Barbados we use American computers, TVs etc. I recently acquired a 64 after previously owning a Vic-20, and I have a Zenith television which produces screen flutter - which I controlled (on the Vic 20) using POKE 36864,133. But I haven't figured out how to perform the same operation on the 64. HELP!

I have Simon's BASIC which I bought for $26.00 US. I have only found one bug; the COPY command produces an array of weird and wonderful lines and characters which if they were sent to the Pentagon they would spend a year decoding them. Apart from that it is an excellent program.

I typed in *Lightspeed* and found it quite a good game except for one thing. A player can stop the movement of the other by holding down a key. This can be remedied by using 2 joysticks or 1 joystick and keybord and deleting the GOTO160s in the check keybord routine though.

Andre Gibbs, 3 Adams Castle, Worthing P.O., BARBADOS.

Vicsoft hard

In previous issues of **Commodore User** you have asked for readers comments on what we think of Commodore and its back-up service. Try this for size; the ultimate adjective I leave to you and your readers.

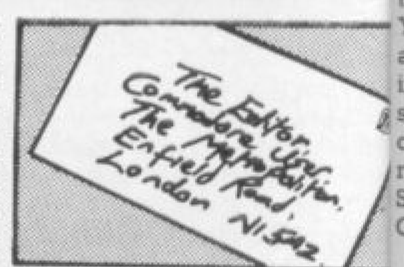
In May 1983 I bought a Commodore 64 and immediately sent away my registration form. By return of post I received confirmation of my registration and a Vicsoft magazine.

On 15 September 1983 I sent off my first order for Vicsoft Membership, Sprite/Graphics Editor, Know Your Own Personality and Money Manager – total cost including VAT £30.97.

I received by return of post my membership card, plastic computer cover, plastic disc box and an invoice stating that the three tapes were to follow.

At the end of October I received the Know Your Own Personality tape, but no explanation regarding the other two tapes.

On 30 November 1983, I received a *second* copy of Know Your Own Personality, with no ex-



planation why or the whereabout of the other two tapes.

At this stage I rang the Vicsoft office (when I could finally get through) and spoke to a Miss Heidi Jones. I explained the situation to date and asked what procedure to adopt with the surplus tape. She advised me to send the unwanted tape back and they would refund the cost of postage. With regard to the two tapes outstanding, she would investigate and ring me back.

I sent the unwanted tape back immediately — recorded delivery at a cost of £1.20. I also sent a letter at the same time, detailing the events to date and asking for an explanation regarding the two outstanding tapes. Both my telephone call and my letter were ignored: I heard nothing and received nothing.

On 15 December 1983 I decided to speak to the Manager in person — a Mrs Shaw. She knew nothing about my case personally, but she did know they were having problems with the Money Manager and this would be about 2 to 3 weeks. Regarding the other tape and refund, she would investigate and ring me back.

By mid January 1984 I had heard nothing and received nothing. I rang Vicsoft and asked to speak to Mrs Shaw. She either could not or would not speak to me but passed me over to a Miss Jane Lunn. She knew nothing of my problem so I had to start from the beginning. I explained the situation to date. She said they were having problems with the Money Manager and that would be about 2 to 3 weeks. Regarding the other outstanding tape and the refund, she would look into this and ring me back

She did indeed ring back to say that they were not out of stock

the Sprite/Graphics Editor but they couldn't find one. They would however make every effort to find one and send it on.

End of January 1984: I received Spring Catalogue from Vicsoft from which I noted they were still advertising the Money Manager and the Sprite/Graphics Editor on a 28 day delivery basis.

At the end of February I had heard nothing and received nothing. I contacted the Consumer Protection Department of the South Yorkshire County Council. They advised me to write to Vicsoft giving all the relevant details and specify that if a reply was not received by a specified date, a summons would be issued through the Small Claims Procedure in the County Court.

My letter was dated 25 February 1984. I asked for my tapes and postal refund, my money back or an explanation. My letter was completely ignored. I then asked the Consumer Protection Department to try to make contact with them, in the hope that they might succeed where I had failed. The Department wrote to Mrs Shaw on 19 March 1984. Three weeks later they had had no reply from Commodore.

Over the next five weeks much time and effort, not to mention the cost of the telephone calls, were made by the Consumer Protection Department to get some response from Commodore. Finally on 10 May 1984 I received a cardboard box, inside of which was:-

(a) 1 Money Manager tape
(b) 1 Sprite/Graphics Editor tape
(c) 1 One Pound Note
(d) 2 Ten Pence Pieces, stuck to a piece of cardboard with sellotape.

Nothing else included in the package – no explanation or apology for the delay, no expression of concern at the inconvenience caused; a case it would seem of "This is what you ordered, here it is, only 8 months late, now shut up".

Needless to say I shall be ordering nothing more from Commodore. Anyone in the future who intends ordering from Vicsoft I suggest would need to be very tolerant, very patient, very cool, calm and collected — and not inclined to get too hot under the collar when something they order on a 28 day delivery basis turns up 8 months later.

F.C. Powis, 10 Hampole Balk Lane, Skellow, Doncaster DN6 8LF.

And harder

Two things compel me to write, the first of which I hope will warn others of the hazards and joys of mail order.

In November I ordered a selection of software from Vicsoft, a Commodore subsidiary, believing any order to be fairly safe. In January, after advice from Vicsoft of delays in delivery of all the items on order, the first began to arrive. One item failed to arrive by mid February; and one was defective. A second copy failed to load. By mid March I had at last after many letters managed to get a refund for the non-delivered item. However Vicsoft have ignored all letters relating to the defective program.

In marked contrast, on Sunday I telephoned an order for *Flight Path 737* for my Vic-20 to Anirog. Five days later (and one a bank holiday) this highly recommended product arrived. Congratulations and well done, Anirog; Vicsoft could learn from you.

Finally I must praise and criticise **Commodore User**. Today I received my copy of your excellent magazine: but as a subscriber why have I had to look longingly at May's issue on my newsagents shelf for the past eight days while I wait? Surely your first copies should be delivered to subscribers and not rushed to the shops? If this continues I shall obviously be seriously considering my subscription renewal with a view to purchasing your or your competitors volumes from my newsagents.

Keep up the good work; but *please*, post first and keep your regulars.

K. Moore, 28 Rachael Close, Fair Oak, Eastleigh, Hants. SO5 7LJ.

We've had a number of complaints about Vicsoft, and since Commodore hasn't chosen to respond to our letters requesting a comment it's about time some of these complaints were aired.

It is worth pointing out that Vicsoft is a big operation: statistically a small percentage of foul-ups are to be expected, and the bigger the sale the more people will fall into the Suffering Minority category.

That's the kindly view, anyhow. No comfort at all to the sufferers, I'm afraid. We're preparing a piece on what kind of legal redress you have against non-delivery or non-operation of any product, homing in particularly on mail-order houses. But they come and go like the tooth fairy: like the disappearance of Anik a few weeks ago left many people stranded and their cheques cashed without products having been despatched...

As for the discrepancy in deliveries between subscription mailings and the newsstands, I'm afraid that's an uncomfortable fact of the way magazines like us operate. Ten days before publication we HAVE to give copies of the magazine to the company who supplies the middlemen who supply the retailers: in most cases that means the distribution takes nine or ten whole days. But sometimes, in some areas, some of those middlemen can get the copies to the newsagents a lot faster.

We're looking into this and will be trying to ensure a better service for subscribers versus newsstand buyers.

Applause always welcome

I have just purchased my first Commodore User magazine and I wish you to know that I am very impressed. I have read it from beginning to end and contrary to some comments from your readers, I find the information and layout above that which I normally find in other magazines. Perhaps they would change their minds if they read the vast amount of rubbish I read in some magazines and books.

Keith Worsley, 4 Windy Grove, Wilsden, Bradford BD15 0LA.

ArFon angst

I am writing in to warn your readers of a potential danger concerning the Arfon Expansion unit for the Vic-20. The dangerous situation arises when the unit is being used in conjunction with the original Vic transformer in order to give access to the user port. If the original transformer is connected and the Arfon user port is inserted, the 9 volts ac given by the Vic through the user port is applied to the Arfon transformer and the neon light on the Arfon unit will glow.

If the Arfon switch is then made to connect, the transformer is connected and the plug on the end of the Arfon lead becomes live.

The only solution to this seems to be to keep the Arfon switch *off*, for the setup of the Arfon unit would prevent the expansion board from working if anything were done to rectify the problem. The situation is an unfortunate fact for which Arfon are not to blame, but perhaps they should warn people about it in the documentation?

There is also another less important danger of the Arfon unit – if the actual expansion board is connected to the Vic when the system is operating from the Vic transformer only, the fuse in the Vic will blow.

D.Gardiner, Old Timbers, Frenchmoor, West Tytherley, Wilts SP5 1NU.

There is also another less important danger of the Arfon unit – if the actual expansion board is connected to the Vic when the system is operating from the Vic transformer only, the fuse in the Vic will blow.

Arfon is no longer with us, sadly, and we don't think the (generally commendable) expansion unit is still on sale. Anyone know otherwise?

Out for the Count

Help! Does anyone know how to find (and then kill!) Dracula, having already found the coffin, in *The Count*?

Alternatively, I will help anyone who has problems with *Adventureland*, *Mission Impossible* (which is possible) or *Voodoo Castle*.

Incidentally, like many others, I feel there should be an Adventure section in Commodore User, to make this superb magazine into a perfect one!!

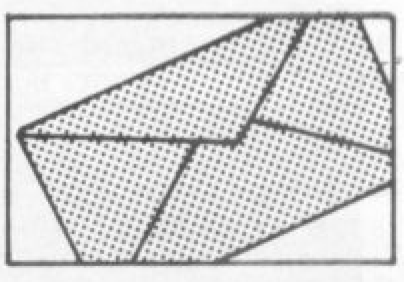
Francis Lee, 45 West Drive, Handsworth, Birmingham B20 3ST.

Adventure page starts in the Autumn.

Bouquet ...

After reading your article on Whitby's 'business commands' cartridge I spoke to Mr David Tindale on the telephone. He told me that there had been a slight mistake in the article, in that his standard product costs only £29.95 and not the £34 quoted.

For £34 I could have the standard chip plus an expansion tape containing the extra commands I required. I placed my order at 4.30pm on Friday evening giving



my Access card number.

To my surprise and delight at 8.30am on Saturday morning the package from Whitby was on my doorstep.

Well done, Whitby, for an excellent product and incredible speed of delivery!

R. Francis, 5 Brewis Road, Rhos-on-Sea, Colwyn Bay, Clwyd, N. Wales LL28 4UR.

... copy of a bouquet

To: RAM Electronics (Fleet) Ltd.
106 Fleet Road,
Hampshire,
GU13 8PA.

I am writing to thank you for service that can only be described as superb. I posted my Vicsprint to you on a Friday, enclosing a note with a brief description of the fault, and an apology for having taken the unit apart to shorten the lead.

I had hoped that you would be able to repair it fairly quickly, but I had no idea that the following Wednesday I would receive, by recorded delivery, a brand new Vicsprint complete with updated instructions. This level of service goes way beyond reasonable expectations and deserves an acknowledgement.

I am sending a copy of this letter to **Commodore User** in the hope that they can let their other readers know that yours is a company that does not lose interest in their customers after their initial purchase.

John Elliott, 96A Fore Street, Saltash, Cornwall PL12 6AF.

Printing by numbers

I have been trying to discover a better method of listing numbers so that the decimal point is always in the same column. The method used hitherto has been to convert numeric and integer variables to string variables and then determine len($).

However, I now find that if the log. of the number (x) is divided by log(10), it produces an integer value equal to one less than the number of digits in the integer of (x).

This appears good for all numbers with a maximum of two decimal places, in the range of .01 to 1M+ and is therefore suitable for all cash listings.

The following program demonstrates the principle, the 'meat' being in line 30 which can, of course, be used in any program.

```
5 REM **PRINTING TO THE
  SCREEN**
10 PRINT"[CLR]"
20 FOR N=1 TO 10: READ X
30 T=INT (LOG(X)/LOG(10))+1:
   IFT<1 THEN T=0
40 PRINT TAB(16-T);X
50 NEXT
100 DATA 1234,12,34,123,4,0,12,
    1234,56
110 DATA 01,123456,78,
    1999999,99,1,00,0,9
```

David J Wright, 94 Bevendean Crescent, Brighton BN2 4RA.

Disk tip

The following information may be of use to your readers, especially those who are contemplating the purchase of a Commodore 1541 disk drive.

According to the manual, the sample programs issued with the drive, the word processing package EASYSCRIPT and all other published material that I have investigated, an already existing file on a disk may be overwritten by a file of the same name by using the save-and-replace command – as in "SAVE "@FRED",8".

What the aforementioned documentation omits is the information that using this command may destroy *other* files on the disk by overwriting them with the contents of "FRED".

When challenged with this Commodore replied: "There ia a problem with the SAVE@ command. The command seems to overwrite existing records on a disk if the new program is longer than the first. The only way to overcome this problem would be to delete the old file first and then re-save or save the new file under a different name and then erase the old file and rename the new one."

A number of new disk commands were also supplied by Commodore. These commands are listed here as they are not described in the 1541 manual and do slightly simplify the rather tedious save-and-replace sequence described.

Formatting:
OPEN 1,8,15, "NO: program name,ID"::CLOSE1

Scratch:
OPEN 1,8,15, "SO: program name": CLOSE1

Rename:
OPEN 1,8,15, "RO: program name": CLOSE1

Initialise:
OPEN 1,8,15, "IO: program name": CLOSE1

Validate:
OPEN 1,8,15, "VO: program name"::CLOSE1

Commodore seems unconcerned both with the inconvenience caused by this procedure and by the fact that this problem has to be discovered by the user – in my case at the cost of several files, resulting in a great deal of wasted time and effort.

There is no promise of an updated drive manual or firmware fix for the problem. Buyer (and disk user) BEWARE!

D.J. Morgan, 12 Clarendon Close, Broadstone, Dorset BH18 9HR.

Get the picture?

If you have a rolling or unclear picture the following procedure should help. Turn the Vic upside down and undo the three screws. Now lift off the bottom. Before the two parts will completely separate you should disconnect the plug to the power LED – noting which way round it was – and also disconnect the keyboard connector.

Just behind the two DIN sockets at the back of the computer you should see two plastic tuning ports. By adjusting these you increase the size of the signal to the TV (or decrease it). By adjusting these you should get a stable and clear picture.

If you find that the Vic's video signal interferes with another TV channel, the following adjustment will solve the problem. Peel off the Commodore label on your modulator. You should now see two small pots. If the socket for the RF lead to the TV is taken as being the top of the modulator you should adjust the pot which is nearest to the top. Adjusting this clockwise or anticlockwise will move the Vic's signal away from the broadcast signal.

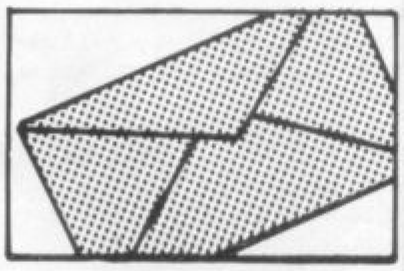
Also, if you have a lot of background noise or no sound at all try adjusting the other pot on the modulator.

David Sim, 17 Mastrick Land, Aberdeen AB2 5JS.

Singalong

I have read many reviews of Commodore's EasyScript word processor, mostly favourable, but I have yet to see any mention of one of its more unusual features – namely, the ability to provide Music While You Work. In all honesty, I only found this unsung (if you will excuse the pun) facility by accident; for all I know it could be common knowledge.

If you press 'F1' to enter the Command Mode, then CTRL and 3 together, you will hear a quite delightful rendition of – of all things –



Land of Hope and Glory. I have yet to figure out why. Any rational explanation would be most welcome.

Many thanks for a magazine that manages to maintain a generally high standard. Trust your 'going public' via the newsagents has paid off and that we can look forward to many more good issues to come.

R.C. Medford, 7 Thorn Grove, Hale, Altrincham, Cheshire WA15 9AW.

Anything you Karn do (you can)

To answer Stephen Oliver's question concerning *Heroes of Karn* to get out of the prison you must give the bag of gold to the Guard. The bag of gold is got by attacking the barrowight with the bible. From the prison you will find the meat and other objects. There is a word involved in the game, you say "orion" and something happens. I haven't reached it yet, but I know this because it's easily listed.

I would like to know where the bottle is; and how do I get the shovel from the Pirate?

I'm not too impressed with the game's very limited vocabulary, but it is a challenge.

I enjoy your mag, but couldn't you include more 64 information?

Ian McCooey, 31 Stapleton Road, Rainhill, Merseyside L35 4PY.

Extra Vic graphics

Have you ever wished that your Vic-20 had more graphics characters available without the need for the complicated process of programming your own?

Well, there are a number of graphics characters in your Vic-20 just waiting for you to find them.

The following listing will give you a small sample of what you can do.

```
10 PRINT "(SHIFT CLR)": POKE
   36879,93:C=30720
20 A=7680
30 FOR E=8 TO 15
40 POKE A,42: POKE A+C,E:
   A=A+44
50 NEXT E
60 PRINT "(14 CRSR DN'S)"
```

RUN this program and you will see what I mean.

The characters that this program produces are not available by direct key entry, and yet are very simple to access.

And it doesn't end there.

The number 42 in line 40 is the screen code number for *, but any other Screen Code number will produce it's own characters (try 81 or 87 for example).

The Screen/Border colour combination in line 10 (POKE 36879) was chosen to make the characters easy to see on my Black & White monitor, but it works with any combination.

It is interesting to note that these characters appear only when you use colour codes 8-15 and not with the other colours that are available with direct key entry. It is also fascinating that many of the characters are multi-coloured.

So now you have an immense selection of characters available that you didn't know you had, just by using a few simple programming steps!

Alan Rumsey, 49 Collins Street, Narrabeen, 2101 Sydney, Australia.

Multiplan revisited

I read with great interest your May 1983 article about Multiplan and can see that you are convinced that this is *the* one (except for the inability of the printer to cope 100 per cent).

Since acquiring a 64 I have added all the extras, disk and printer; and would like to use a spreadsheet to experiment with. But I have held back from purchasing mainly because I am not convinced we receive value for money at £100 a throw to purchase VisiCalc or others.

I believe that **Commodore User** should publish listing for spreadsheets etc to keep our interest in the publication and also derive value from our reading of the many articles that are published. We should be able to share the cost of purchasing Multiplan or a disk at much reduced prices.

What about selling me your VisiCalc at a much reduced price now that you realize it is outdated?).

I would be very interested in your views as you seem to have your finger on the pulse of what goes on in this rat-race of a marketplace.

R M^c^Currie, 41 Knowle Avenue, Cleveleys FY5 3PW.

Listings for spreadsheets? We'll think about it. VisiCalc for sale? Sorry, we have too many VisiCalc spreadsheets to junk it.

Reversals

In reply to D Rawnsley of Scunthorpe, who wanted to know how he could generate the S symbol: this is a replacement symbol for the reversed £. Apparently some printers cannot generate the proper reversed £.

R. Wilson, 20 Crawford Village, Upholland, Lancashire WN8 9QR.

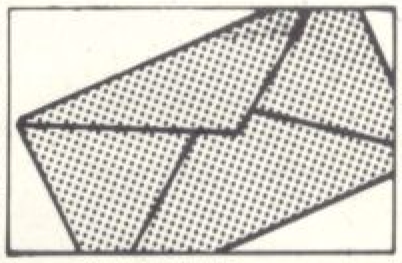
CTRL

I was playing about with my 64 one day when I found if you press the CTRL key you can get these:

CTRL+Q =CURSOR DOWN
CTRL+E =CURSOR WHITE
CTRL+T =DELETE CHARACTER
CTRL+ ↑ =CURSOR GREEN
CTRL+S =CURSOR HOME
CTRL+; =CURSOR RIGHT
CTRL+= =CURSOR BLUE
CTRL+N =LOWER CASE CHARACTERS
CTRL+M =START NEW LINE & CURSOR DOWN
CTRL+£ =CURSOR RED

Hope you like them!

Chris Cobb, 30 Hatton Avenue, Wellingboro', Northants NN8 3AP.



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Hensington Road,
Woodstock,
Oxford OX7 1JR, England
Telephone (0993) 812700
Telex 83147 Ref. OCSL

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MusiCalc makes music more fun, more rewarding and easier than it's ever been before.

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MusiCalc software turns your Commodore 64 computer with disk drive into a sophisticated musical instrument. And it turns you into a composer, performer and conductor.

MusiCalc 1's Synthesizer & Sequencer is the heart of the system. With it you can use your computer keyboard to program the tempo, key and style of music you want, and also to play your favorite tune. The computer screen will show you what the music's doing as you play and how to control it.

Start by selecting one of MusiCalc's preset scores. Try combining that with a preset sound you like. Choose the scale you want to play in—anything from jazz to Japanese.

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Exercise your musical creativity by putting the three voices together any way you want, and playing whichever parts you'd like. Make changes and add special flourishes to create your own compositions.

Even a musical novice will sound good right away. And the greater your musical talent, the more challenging and exciting MusiCalc becomes.

BACH TO BASICS

Although simple to learn, MusiCalc was designed to meet the needs of professional musicians. In fact, it delivers the quality and capabilities professionals have spent thousands of dollars for—up until now. Once you have the Commodore 64 computer and disk drive, you can get started for under $100 with the MusiCalc 1 Synthesizer & Sequencer.

This is a standalone software program you'll never outgrow. And with the variety of other MusiCalc products currently available, plus the many more items Waveform will be introducing in the months ahead, you can expand your music system along with your interest and ability.

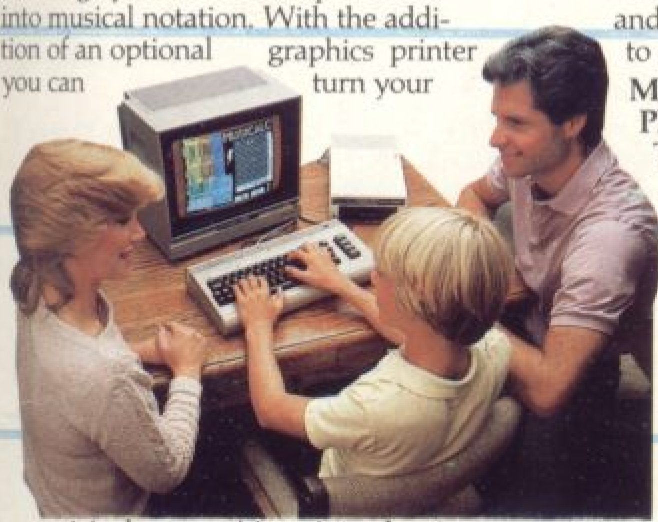
THE MUSICALC SYSTEM

MusiCalc includes a full line of software that brings great music as close as the keypad of your Commodore 64.

MUSICALC 1, Synthesizer & Sequencer Turns the Commodore 64 into a sophisticated musical instrument—a three-voice synthesizer and fully-interactive step sequencer. Play along with a song or write your own. Develop your own instrument sounds. And record the music you create.



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MAKING MUSIC PLAY

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Line Printer Program

```
1 PRINT" LINE PRINTER PROGRAM"
2 OPEN4,4:PRINTCHR$(14)"SET LINE LENGTH FOR":PRINT"THE PAPER COPY."
3 PRINT"UP TO 40 DOUBLE WIDTH":PRINT"UP TO 80 STANDARD CHR"
4 INPUTL:IFL>40THENPRINT#4,CHR$(15):GOTO8
5 PRINT#4,CHR$(14)
6 PRINT#4,CHR$(17)P$
8 PRINT:FORY=1TOL:PRINT"*";:NEXT:FORY=1TOL:PRINT"";:NEXT:P$=""
9 GETR$:IFR$=""THEN9
10 IFASC(R$)=13THEN6
12 IFASC(R$)=20THENP$=LEFT$(P$,LEN(P$)-1):PRINT"";:GOTO9
14 P$=P$+R$:IFLEN(P$)>LTHENPRINT"";:POKE36878,10:POKE36876,150
16 PRINTR$;:POKE36878,0:POKE36876,0:GOTO9
```

Type away

After writing hurriedly in response to your offer of free goodies, I remembered the program listed here. I wrote it quite recently for a physically handicapped boy so that he could write on paper with Vic and printer.

The "64 as Typewriter" program that you mentioned in March seems a little limited to me but then I don't have a 64 to try it on. As you see, my Line Printer works well. It can cope with 80 characters of standard size or up to 40 double width characters. It has a delete feature and is free of gremlins (I hope).

You may need to close #4 when you finish using the program.

Ray Vyse, 68 Beech Gardens, Rainford, St. Helens WA11 8DL.

Bug fix

I've just typed in the scrolling program sent in by a Barry O'Rourke, see issue 6 volume 1. But there is an error in line 10. The aforesaid line is corrected as:

```
10 A$+"": FOR T=0 TO 18:
   A$=A$+CHR$(29): NEXT
```

Apart from that I've no complaint. So keep up the good work.

Jon Tout

A big hand ...

I felt I must write and inform you and if possible other readers of the excellent service I may have received from an advertiser in your magazine, namely Newscope Developments.

About 1530hrs on Monday 5 March I phoned the company in question, gave my order over the phone used my flexible friend (Access) and waited. At 0905hrs on 8 March my order arrived.

I recently became a subscriber to your magazine and find it excellent value for money; I am pleased that I can order with confidence from firms and that the service is so good. I trust that my observations will be of use to other readers, a hope also that Deals for Reade gets a little larger.

P.D. Parkinson, 25 Euston Grove, Fulwell, Sunderland SR 1QB, Tyne and Wear

A valuable book

I was surprised to read your revi of the 64 games book by Cliffo and Mark Ramshaw.

My father bought a 64 in Octob '83; we are all novices. We fou the book excellent value money. Admittedly the games a not arcade quality, but they ha been fun to type in, they do "RU and give a good introduction games playing.

I would recommend it for a beginner who doesn't want to thrusted into the world of machi code straight away.

Melanie Whelan (age 11), 20 Nell Lane, Chorlton-cum-Har Manchester 21.

Return of the Single-line Competition

Write a one-line program in Basic

No real restrictions, though we do ask for *original* offerings – and do use the form below! But you can use Vic or 64 and on the Vic you can assume any memory size and/or the Super Expander if you want.

Note that the 64 is limited to 80 characters a line, the Vic can have 88.

If you want to submit more than one entry, you're welcome to do so: at least one of them must be on the form, the others should be on a separate sheet *with your name and address on the sheet*.

The five best entrants, those with programs that do as much as possible in a single line, get Fame, Exposure, Success, and a sweatshirt (not necessarily in that order).

SINGLE–LINE COMPETITION

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Send to: Single-Line Competition, Commodore User, The Metropolitan, Enfield Road, London N1 5AZ.

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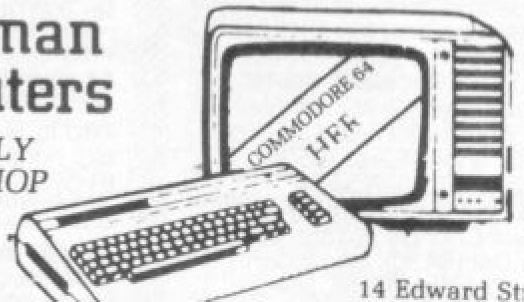
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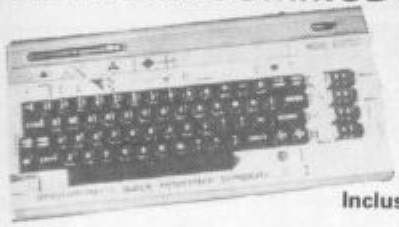
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I would like to exchange programs for 64. Send your list of programs for exchanges to: Fernando Forner, Via Valperga, Caluso 21, Turin (Italy).

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Yanks are hackers too! Washington area C-64 user wants to swap disks and info. Write to David Bell, 5528 Plainfield Ave, Baltimore, Maryland 21206, USA.

Penpal wanted for 16 year old Australian Vic user not very experienced computer operator. Contact: Gary, 5 Cascade Drive, Casino 2470, NSW, Australia.

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CBM64 look for other CBM64's to exchange tips and programs (already 700 excellent softwares). Contact: A Gerard, BP116, Liege 10, Belgium. (All letters answered).

A public domain software user group seeks members in all parts of the world. CBM64 users with disk drives please contact: Brendan Conroy, 85 Upper Drumcondra Rd, Dublin 9 Ireland.

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Is there anyone out there aged 14-16 with a 16K/3K Vic-20? Must be quite good at programming and must be in West Yorks area, if poss in Bradford area. PS: If poss must be female. If you're interested Tel: STD(0274) 874737. Ask for Jonathan might consider overseas penpals, urgent.

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Vic-20 owners penpal wanted age between 13 to 15. Write to Hockey "Ian Lockett", 1 Farndon Ave, Sutton Manor, St Helens, Merseyside WA9 4DW (doesn't matter if boy or girl).

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Swap my 64 software (games), for business software (spreadsheets, data-base, business graphics). Call or write to: Bojan Sodnik, Ceneta Stuparja 3, 61 231 Ljubljana-Crnuce, Yugoslavia. Tel: YU (61) 347721.

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Vic-20 software for those who write French, this program creating all acents required. Expanded Vic. £8 if disk or cassette sent. Cyril Aubry, 6 Rue Chanotte 21000, Dijon, France.

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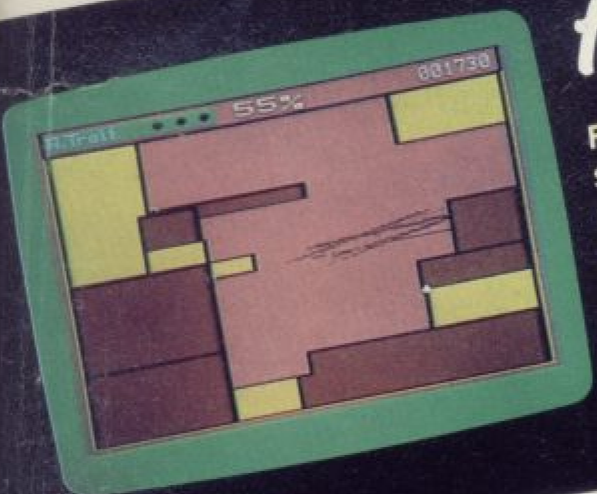
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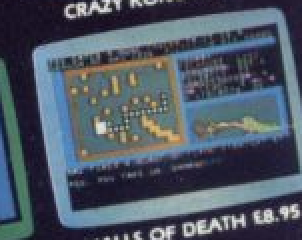
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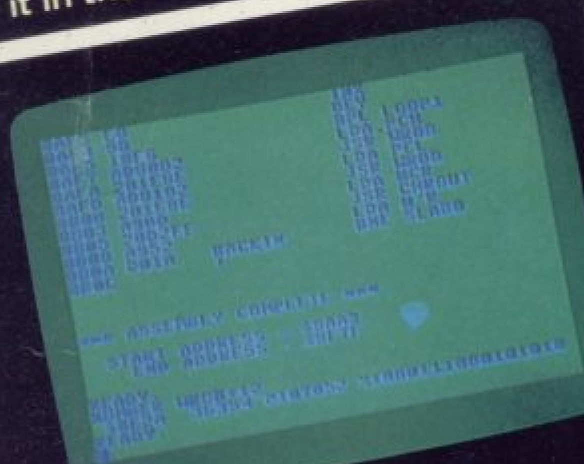
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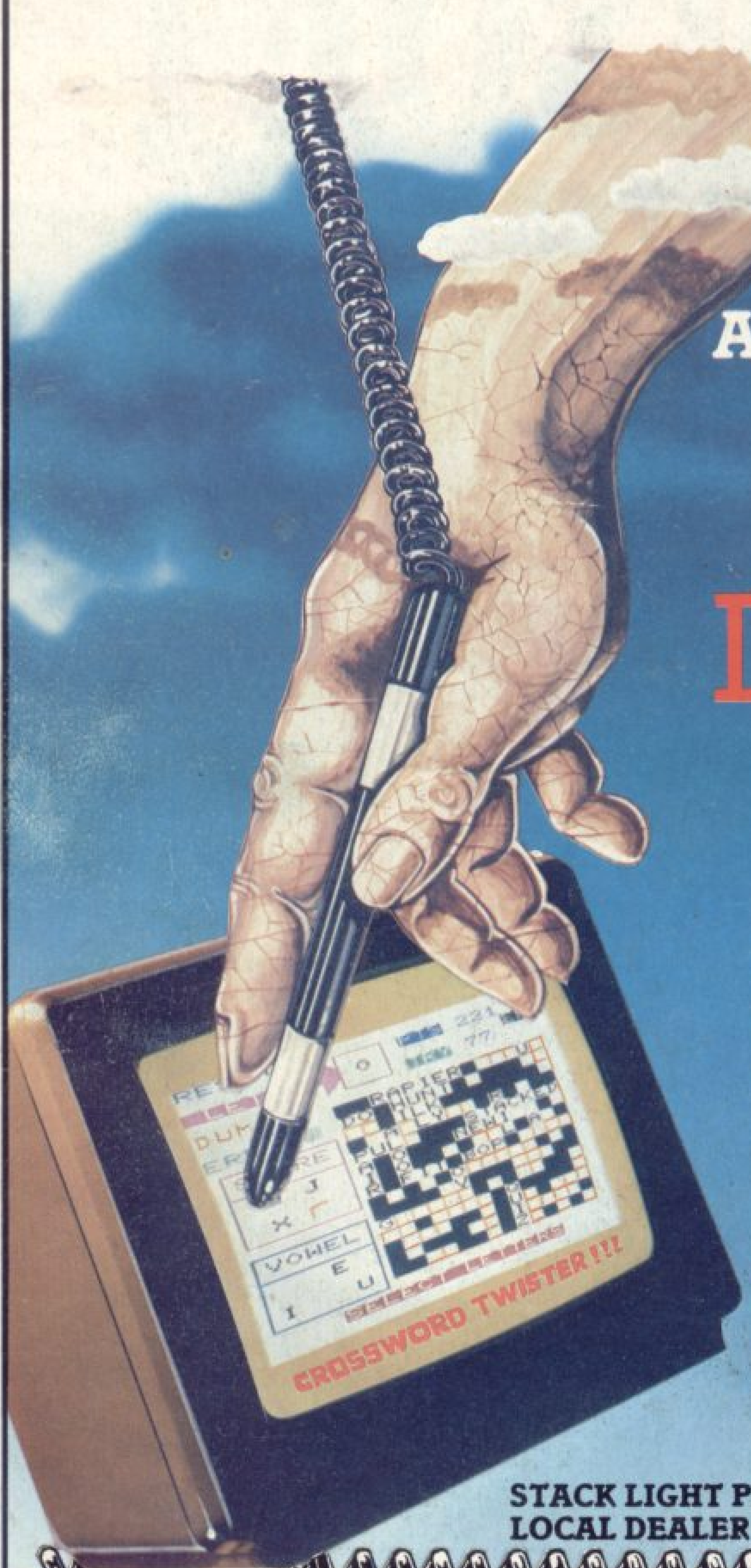


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